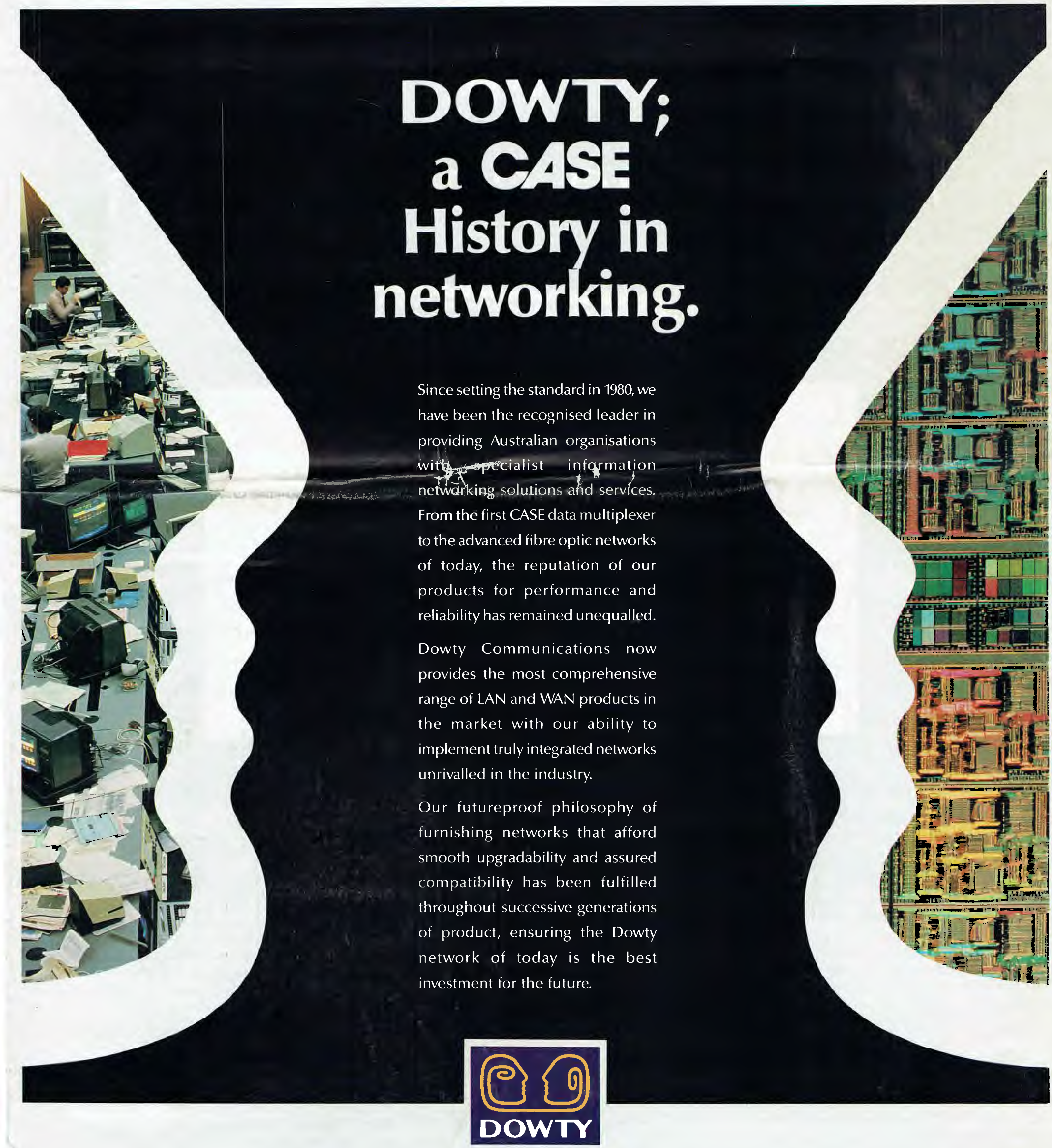
Communications Engineer

NETWORKS DATACOMMS

HARDWARE SOFTWARE

NOVEMBER 1991



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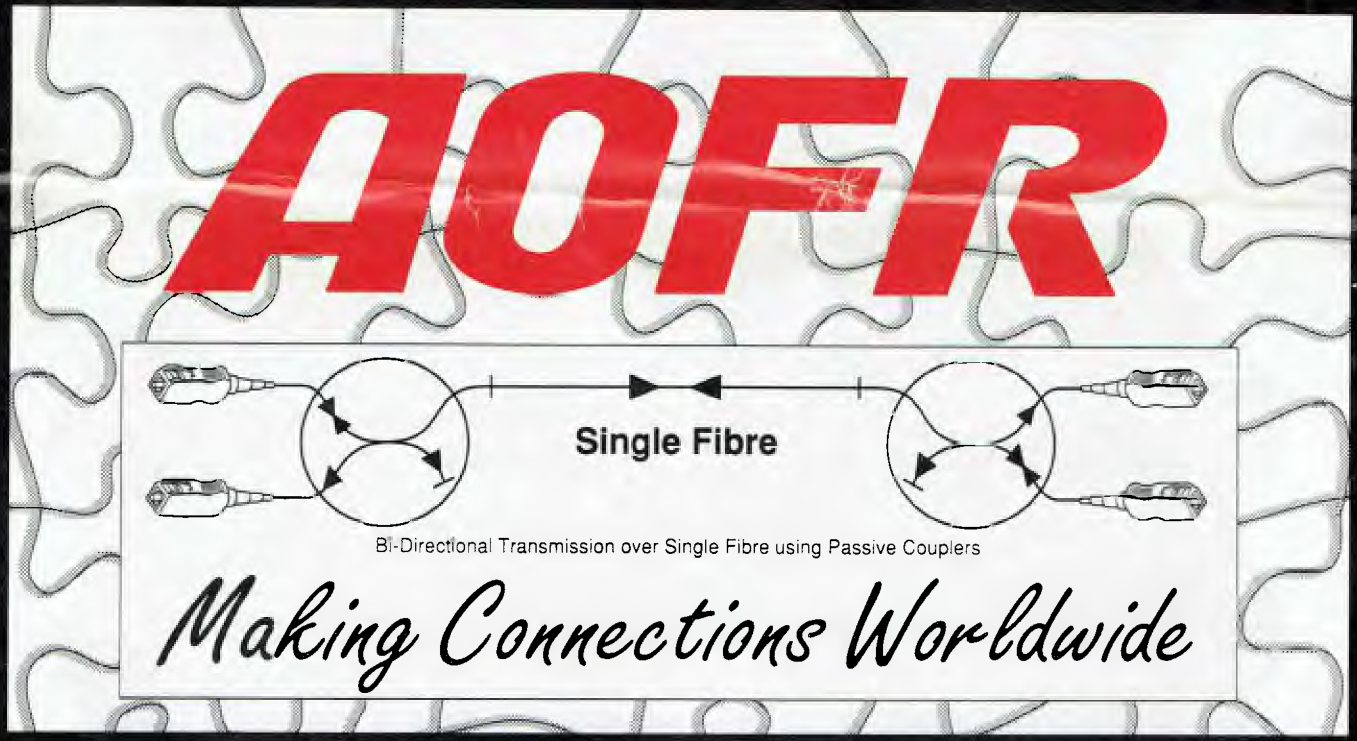
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New WAN for GIO in $17M contract

GIO is implementing an X.25 based wide area network (WAN) to interconnect its 130 branches around Australia.

In parallel with this, the company has awarded a $16.8 million six month systems integration contract to Bull Australia to install Token Ring local area networking.

The WAN solution is designed to give access to both the Bull and Hitachi Data Systems (HDS) mainframes located in Sydney, to facilitate the release of GIO's universal account client file application.

Infatron is supplying equipment for the WAN which include X.25 switches and terminal emulators.

In metropolitan areas, the branches are connected via 2M bits/s lines leased from Telecom Australia. Regional centres will use high speed lines for high volume processing.

As prime contractor, Bull will order the equipment, as well as loading OS/2 and LAN software, and will carry out testing, installation, branch fit-out, staff training and support.

Equipment selected for the system includes 800 AST Premium workstations, Proteon multiple access units (MAUs), IBM and Nokia printers, and Linx and Superlinx uninterruptible power supplies (UPSs) from Maitec.

The $5.7 million worth of AST workstations consist of Premium 386SX/20s, 386/33s and 486/25s.

The new network will replace current branch computing arrangements based on dumb terminals and printers connected to GIO's mainframe.

GIO staff will be able to access, create, amend and update centralised client files. The universal account client file will be linked to application records of the products purchased by each client.

The LAN consists of OS/2 Token Ring networks in each branch, and operates under Microsoft LAN Manager and the COM Server.

LAN interconnections will mainly use 4.8K bits/s lines but will be later upgraded to 6K bits/s lines. A dial-in network is being considered for smaller agencies that have low traffic.

The new branch environment will be piloted in the GIO's Clarence Street branch in Sydney, followed by a further five Sydney metropolitan locations.

Remaining site installations will cover offices in NSW, Queensland, Victoria, WA and the ACT.

OTC navigates outsourcing market

OTC has launched what it describes as Australia's first specialist communications outsourcing company, Navigator Communications.

According to Navigator's chief executive Daryll Smith, outsourcing and other strategic communications services are becoming more attractive because of the cost savings they offer in the current economy.

As well, such services reduce a company's reliance on its internal skills base, which is an important consideration in an industry where skills are in short supply.

"Many companies already outsource expertise for accounting, advertising and legal matters, and the trend now being established in Australia is for companies to look to strategic communications management to get greater efficiency and return from their communications networks," he said.

"As well as outsourcing, Navigator provides a comprehensive range of services such as facilities management, system and network integration and managed network services which can be tailored to meet the needs of individual companies."

Although operating at arm's length from OTC, Mr Smith said Navigator would be backed by both skills and financial resources from its parent.

However, he emphasised that it would remain carrier and vendor independent from the parent company.

The company is taking part in the recently announced South Australian government's Information Utility, and is included on a register for the supply of services to the NSW telecommunications network.

HP extends open systems push

Three products submitted by Hewlett-Packard to the OSF (Open Software Foundation) have been accepted as the main components of the OSF's Distributed Management Environment (DME).

The products are HP's OpenView Network Management Server, Network License System and Software Distribution Utilities. Their acceptance will provide users a standard-based framework and software services for unified system, network and application management.

Hewlett-Packard's networking development manager Dr Ali Al-Tarafi emphasised the importance of the announcement for HP's own customers, saying "they can buy HP products today and be confident their investment will be the foundation of future standards-based products."

"This latest standardisation effort from OSF in implementing the OSI model across multiple platforms is a leap forward for the industry.

"The focus is not necessarily on interoperability, but on having the same network manager across multi-vendor platforms."

The company has also announced that it will use the OSF/DCE as a unifying element across all HP computer systems.

It will make the technologies available on MPE/XL, an operating system for its multiuser Risc platforms.

This completes HP's plan to provide distributed computing technologies across all its operating environments, including HP-UX, Domain/OS, OSF/1 and MPE/XL.

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Voice activated computers control forex

Melbourne-based Applied Financial Services (AFS) has developed what it claims to be the world's first voice activated foreign exchange dealing system, providing hands free, mobile realtime operation.

With funding assistance from Digital Equipment Corporation and Telecom, the FINE-Voice Trader system is driven by voice using Verbex' voice recognition system.

The 20/20 spreadsheet system, GIST graphics, Pricewatch data feed software and V-band dealer telephony are integrated by DECtrade, Digital's networking distribution medium.

High quality communications and fast access to other dealers and information are guaranteed with the V-band dealer telephony.

"Voice trader is a unique application of this technology in the dealing room, and delivers major gains in speed, accuracy and productivity," said AFS managing director, John Crowley-Clough.

"It takes dealing to a completely new level of efficiency and sophistication."

The trader system runs under Digital's ULTRIX-Risc operating system on the DECstation workstation.

The workstation is controlled with verbal commands in ordinary language, calling up

Continues on page 5

Small server market target for Compaq's latest

Workgroups and LANs of around five to 30 users are targetted in Compaq's latest server series, the SystemPro/LT range.

The SystemPro/LT machines use the "intelligent modularity" architecture which has been the basis for all of the company's recent releases.

The architecture is designed to offer easy memory expansion to 64Mb, expandable drive capacity to 4.08Gb internal, the ability to incorporate drive array technology, a high performance EISA bus, and a robust power supply to accommodate future needs.

According to Compaq, intelligence built into each component allows it to know the configuration of the rest of the system, and optimise its own performance accordingly.

The SystemPro/LT family consists of EISA-based PC servers built into the SystemPro tower cases. It offers a choice of 25MHz 386, 25MHz 486SX or 33MHz 486 processors and fast fixed drives, and is upgradable for higher processor performance, memory expansion and drive arrays.

Complimentary

"The system is complementary to the DeskPro/M series computers," said Compaq's Tony Parkinson.

They share many of the same components, to minimise the inventory that a system administrator needs to keep to maintain a company's server and workstations.

"We've aimed the LT servers at the small to medium workgroup using operating systems such as Microsoft LAN Manager, NetWare, SCO Unix and Banyan Vines," Mr Parkinson said.

"The SystemPro/LT is positioned to appeal to workgroups that expect growth and increasing demands on network capacity, which is why the expandability of the server is so important," he said.

"Smaller networks, those sharing files and peripherals under Novell NetWare, for example, need to be able to upgrade their processor performance, but they don't need multiprocessing," said Compaq Computer Australia's managing director Ian Penman.

"They need the ability to expand capacity as the workgroup's needs change, but they don't need drive arrays to start with, nor the very high memory capacity of the original Compaq SystemPro."

Compaq has included an asset management system in both the DeskPro/M and SystemPro/LT computers, to help make network administration easier.

System Manager

Each PC retains information on its own serial number or asset number, configuration, memory and installed boards. An administrator can use currently available third-party software to access this information over the network, to keep track of assets or plan configuration changes for individuals or groups.

The company also released an hardware/software management tool, the Compaq System Manager.

Designed to work with Compaq's EISA servers, including the SystemPro and SystemPro/LT, the management system watches over the server, monitoring system health, operation and environmental conditions such as the internal temperature of the server.

It comprises an EISA board installed in the server, and operating system support software installed on the server or host to be monitored.

The administrator operates Compaq System Manager through a Windows application that resides on a separate management PC, which communicates to the management board either via modem or direct connected.

The board can accommodate an optional 2400 bits/s modem, a NiCad battery, and temperature and voltage sensors.

A key feature of the management system is a remote control facility that supports cold system reboots.

Compaq, 100 Harris Street, Pyrmont 2009.

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Software deal signals Specialix commitment to Australian market

UK Unix multiport board maker Specialix has signalled a long-term commitment to the Australian market, signing a deal to handle international marketing of a software product developed in Western Australia.

ATERM+ is a PC terminal emulation package developed by Harrison Computer Services and distributed in Australia by Unetix. It was originally demonstrated in August at the SCO Forum in the United States.

Specialix will be marketing the software as an OEM product through its sales channels in Europe, Asia, the USA and the Pacific region.

Nigel Tranter, technical marketing manager of Specialix International, told Communications Engineer that his company would be inviting further Australian contributions to the company's range.

"Australia is a very strong user of Unix," he said, "and this has given Australian designers great strengths in Unix technology, especially in software.

"I believe there are many places where software products have been created to answer particular needs in one site that we would be able to take to a world-wide market."

Specialix has been working on increasing its Australian presence since it first arrived in this country 18 months ago, establishing an Australian office as the focus for its Asia-Pacific activities.

Earlier this year, it appointed former Stallion house Release4 as its east coast distributor, and in June, Specialix announced RIO, a high capacity Unix I/O system designed to take on the minicomputer market.

The increasing capacity of Unix-based systems to handle large numbers of terminals makes Mr Tranter believe that Unix could experience strong expansion in the near future, at the expense of minicomputer-based solutions.

"Our original SI product was a traditional I/O solution, with a flexible, modular configuration that ultimately grew to being able to handle four 32-port cards in a single PC-based host," he said.

"But we found that the hosts were no longer coping with the demands made on them by large numbers of users.

"This led to the development of our RIO product, which offers large numbers of ports on a single card, but has the I/O processing to keep the host system running at speed.

"Earlier Unix I/O systems really didn't have the power to handle more than fifty users, but with companies like ourselves expanding the capacity of Unix systems, I believe we'll see Unix penetrating markets that were previously dominated by mini systems," Mr Tranter said.

RIO is a Transputer-based system that runs 128 users from a single card in a PC-based Unix host, with all users communicating at 38.4K bits/s.

Up to four of the cards can be installed in a single host.

According to Mr Tranter, RIO's key features are its twisted pair or fibre distribution, which makes premises wiring more flexible than RS232-based terminal I/O, and the processing power built into the remote terminal adapters (RTAs), that helps relieves the host system of I/O processing.

Each host card supports four 10M bits/s communications links to RTAs. The first level of RTA can be located up to 75m from the host computer, and each RTA has eight ports for connecting terminals, printers or other devices.

The RTAs have their own Transputers which support three high speed links to slave RTAs, leading to a maximum configuration of 16 RTAs or 128 terminal devices.

As well, the RTAs can be linked using a fibre optic module, which offers remote terminal connections over distances of up to 1000m between a single RTA and the host, or 2000m between a slave RTA and the host.

Up to four host adapters can be installed in a single system, and every port in a RIO system supports modem connection and transparent printing.

Management for RIO is provided by Specialix' Dynamic Reconfiguration software, which is designed to allow systems to be extended or rearranged with minimum disturbance.

A complete installation map is displayed with plain language reporting of faults, and if clusters of users are moved, the system will automatically reconfigure itself without the need for system modification.

Additional RTAs can be connected whether the system is active or inactive.

Another key feature of RIO is its self-booting nature. The host cards carry RIO's Eros operating system, which is passed down the communications link to RTAs in a "cascade boot" operation.

According to Mr Tranter, this allows the terminal I/O system to be fully booted within around five seconds of power-up.

The Australian Unix multiport I/O market is currently dominated by Queensland-based manufacturer Stallion Technologies. Mr Tranter said Specialix sees Stallion as the only competition in this market, and added that he is "expecting a response" to the RIO product.

Although Specialix put much effort into developing the technology for the RIO product, Mr Tranter believes that strong marketing and distributor support is vital for the success of any product.

"I feel that end users are expecting more and more from the VAR and distributor levels in terms of technical ability and product support.

"We should be looking at providing with solutions that work, without the end user needing to learn the technology to keep things going.

"That's where the training and technical ability of the VARs is

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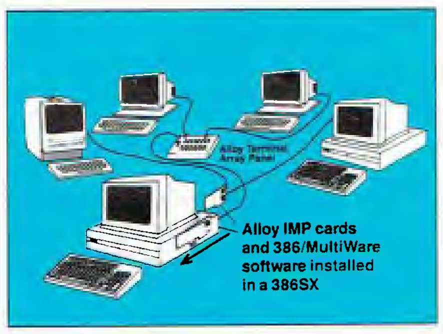
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Name change signals new role for Dowty

by Richard Chirgwin

The September change of name for CASE Communications Systems to Dowty Communications signalled an expansion in the company's role and responsibilities.

CASE had been purchased by the Dowty organisation two years ago. The change of name was decided upon to go with the company's establishment as Dowty's headquarters for the Asia-Pacific region.

According to Barry Foster, managing director and founder of CASE Communications, who has been appointed to head the Asia-Pacific operations, there were two reasons behind the decision to raise the profile of the Australian operation.

"The first was the decision taken by the Dowty board that they wanted to put a greater emphasis on the region because of the greater potential for growth that they saw," Mr Foster told CE.

"Dowty has effectively split the world up into three trading regions: Europe, the Americas and the Asia-Pacific.

"Having decided to establish this trading region, Dowty chose to make Australia the headquarters because of the resources we already had here in skills and technologies, and our success in the Australian market."

In Asia, the company operates offices in Hong Kong, Singapore and Tokyo, supporting distributors throughout the region.

The existing customer base for Dowty includes major network users such as the Bank of China, Hong Kong and Shanghai Banking, HK Telecom, Shell Brunei and Citibank.

"There are some outstanding growth opportunities for us in Asia, and we can use the strength of our resources in Australia to develop and support the market," Mr Foster said.

"A regional technical support group has been set up in Australia and special product developments geared to the Asian market are currently being evaluated.

"The key markets in the Asia-Pacific vary somewhat from product line to product line.

"The largest markets are in Japan, Korea, Hong Kong, Singapore, and Taiwan. From there you move down to the next level, Thailand and so on.

"One challenge in covering such a region is the huge difference in the state of development between different countries, in their technologies and infrastructures.

"So in a strong, advanced market like Japan, we're seeing rapid development in the X.25 market as the country moves from a market very much dominated by IBM-compatible mainframes, to a market that has a much broader spread of size and type of computer.

"In the less developed, lower end markets we've got demand for modems, multiplexers and the less sophisticated type of local area networking products, PC LANs and lower-end bridges," Mr Foster said.

He also emphasised the importance of development work in dealing with the Asia-Pacific market.

"For example, in some of the higher-end markets we're seeing demand for special protocol conversions in X.25 applications.

"The level of skill required to carry out such developments is very high.

"The other area we're working on at the moment is in message handling products, which are aimed at automating fax and telex. These products are seeing a very strong demand in the Asia-Pacific.

"Telex, although not growing, is still huge in Asia, and facsimile is growing.

"We're also developing custom implementations of message handling systems for our customers, to suit their office automation systems.

"We're quoting for a contract for Hong Kong and Shanghai banking, which is for eight message switching systems which will be spread around the region," Mr Foster said.

Since the acquisition of CASE by Dowty, the company has recorded strong growth, with revenue increasing 31% in the first six months of this financial year, taking annualised revenues to more than $40.

Although Australian manufacturing is only worth around 5% of Dowty's turnover, Mr Foster expects this to grow with the move into Asia.

ACT office for Cabletron

TWELVE months after its arrival in Australia, Cabletron Systems has expanded its business with the opening of a Canberra office.

Michael Howett has been appointed as ACT sales manager, and brings more than ten years experience in the ACT to the office, having worked with DEC, Oracle and Wang.

The ACT office is located in Marcus Clarke Street, Canberra, and will be supporting the company's existing end user and reseller base as well as expanding the business.

"A year after launching Cabletron in Australia, we are pleased to be able to expand our services in Canberra," said national sales and marketing manager David Blythe.

"We are now able to provide corporate and government LAN users with direct support in this state, and hope to increase market perception of the Cabletron solution as a result."

Telephone number for the Canberra office is (06) 243 4828.

Software deal signals Specialix commitment to Australian market

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vital, and we'll be working hard to support our Australian distribution in this.

"That's another reason behind our search for products like ATERM+. We want to take on software products that provide specific solutions to end-users' problems."

ATERM+ was first developed 12 months ago by Harrison Computer Services to connect MS-DOS PCs to a Unix server, while retaining the PC's ability to run MS-DOS programs.

By providing this connectivity, the software reduces the capital investment required to supply PCs and terminals when both DOS and Unix are used in the same site.

Australian sales director for Specialix, Steve Wheeler, said "ATERM+ fits our market niche and expertise.

"For some time Specialix has been looking at ways to expand into complementary product areas, either by internal research and development, or by purchasing technology.

"ATERM+ is our first purchase of marketing rights, and it is an important strategic move for both companies."

The software has a menu-driven user interface which is activated by hot keys from within any Unix application.

Bidirectional text or binary file transfer between the two operating systems is supported, with automatic system format conversion.

Documents created under either operating system can be sent to any printer connected to the Unix system, or printed locally at the PC.

The software operates with DOS versions 3.3 and higher, and under Windows, and uses standard RS232 serial ports for communication at up to 115,200 bits/s.

It will be sold by license per number of users.

Specialix, PO Box 1151, North Sydney 2059.
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Wellfleet routers near 500,000pps mark

High performance and high flexibility are key features of the latest additions to the Wellfleet range of multiprotocol routers, announced recently by JN Almgren.

Wellfleet's Backbone Node product is designed to offer LAN internetworking for corporate customers. It features up to 480,000 packets per second (pps) performance, along with support for multiple FDDI, 802.6 and Frame Relay interfaces, backward compatibility with existing modules and enhanced network management.

As well as offering maximun reliability and network response and protection of existing investments, JNA believes the new router gives users significant gains in price/performance.

The company says that the increasing number of mission-critical applications being assigned to distributed LANs, combined with higher demand for bandwidth at the desktop means that higher speed LAN and WAN media and services are needed for LAN interconnection.

"Users taking the next step in building their internetworks are now planning for an emerging class of mission-critical, more bandwidth sensitive applications," said JNA's technology and product planning manager Kevin Bloch.

"They need the ability to selectively add capacity where they need it, while retaining compatibility with all of their existing equipment."

To meet these requirements, the Backbone Node offers plug-and-play compatibility with existing Wellfleet products for easy integration into existing internetworks.

The unit uses the same high performance symmetric multiprocessing architecture that already exists in Wellfleet's range.

Two architectural elements make up the Backbone Node: a fast routing engine (FRE) with forwarding performance of 75,000pps; and the parallel packet express (PPX), a 1G bits/s processor interconnect which offers high performance as well as redundancy and load sharing.

The FRE, designed to handle the high traffic demands of FDDI to FDDI interconnects, multiple Ethernets and multiple Token Rings, is based around Motorola's 68040 processor, which is optimised for performance in realtime I/O intensive applications.

It also incorporates a proprietary high speed memory accelerator to further optimise the FRE for fast packet transfers.

To protect the investment, the 68040 processor is housed on a modular daughterboard. This, combined with a software system written in C, allows easy upgrading to new processor technologies as they become available.

The engine also maintains full compatibility with the link modules currently supported by Wellfleet's existing products, so Backbone Node users have access to a variety of interfaces supporting Ethernet, Token Ring and FDDI.

The 1G bits/s PPX processor interconnect comprises four independent, load-sharing data paths for full fault tolerance.

Each FRE connects to all four PPX paths, allowing even traffic distribution across the full 1G bits/s interconnect.

If any path fails, the traffic is automatically redistributed across the remaining paths to maintain Backbone Node operation.

The hardware redundancy and symmetric multiprocessing features of the Backbone Node are combined with on-line servicing to maximise network availablility. It can also be configured with redundant power supplies and local load modules, which are used for program and configuration storage.

Hot swap and dynamic reconfiguration capabilities further enhance service availability by allowing users to replace modules and modify configurations while the node continues to operate.

Two system configurations are available. The four-slot BLN (backbone link node) supports up to 16 LAN or WAN interfaces, including four FDDI interfaces, while the 13-slot BCN (backbone concentrator node) has capacity for 13 FDDI interfaces, 52 LAN interfaces or 52 WAN interfaces.

JN Almgren, 16 Smith Street, Chatswood 2067.
195 on information card

Comms enhancements to Tek XP20 terminals

Tektronix has announced a range of security and performance enhancements to its TekXpress XP20 family of X-Window terminals.

Designed to increase the power of the terminals, the enhancements have been introduced without altering the prices of the range.

Connectivity enhancements include support for SNMP, LAT and SLIP, and the terminals now feature total support for the OSF's Motif graphical user interface.

As well, remote reboot capability has been added, along with support for DEC fonts, VMS automatic login, restricted and internationalised setup, and expanded touch-screen features.

Clock speeds of the three dual processor models in the range have been boosted with a 20MHz Motorola 68030 and 40MHz Texas Instruments 34020 processor, resulting in up to 25% improvements in performance.

For a further performance enhancement, the company has optimised the graphics primitive and text rendering of its X-Window server software.

Tek's implementation of SNMP supports MIB-1 (management information base 1), allowing the terminals to be monitored by common network management software. The company is also offering an extension to MIB-1 for remote reboot, allowing a system administrator to reboot TekXpress terminals from a central location.

The LAT (local area transport) protocol now implemented in the terminals allows users at large DEC sites without X terminal applications to display multiple windows on TekXpress terminals, without X-Window applications running on either the host or the terminal.

The incorporation of SLIP (serial line internet protocol) is aimed at users that require an X terminal at a remote location, and allows connection to a network over serial communication lines.

Tektronix, 80 Waterloo Road, North Ryde 2113.
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RIM mux brings fibre benefits to smaller users

Telecom is to use multiplexing technology developed by Alcatel to introduce a network service which will offer residential and small business customers the benefits of optical fibre technologies.

Under a contract worth an initial $20 million to Alcatel, the introduction of remote integrated multiplexers (RIMs) will "bring the benefits of digital technology reliably and cheaply to ordinary customers," according to Leo Tyrell, head of Telecom's Residential and Network Services Division.

Designed to provide a flexible range of customer services from a small, stand-alone unit, the RIMs can be located close to customer premises and linked by fibre to a parent exchange.

Alcatel won the right to develop the RIM unit after expressions of interest were submitted by a range of international telecommunications suppliers.

Development work on the system began in 1989, using Alcatel's flexible multiplexer technology modified and enhanced to meet Telecom's requirements.

The core system hardware is being developed by Alcatel companies in Belgium and Spain, with Australian engineers taking part. Work being carried out in Australia includes development of special channel cards and network management software.

"Although some of RIM's features are available in some other countries, no country offers the combined features that RIM has," Mr Tyrrell said.

Services offered by the RIM units include basic and primary rate ISDN access, PABX, payphone, credit card phone, credit card phones, private metering and both Securitel and Emtel telemetry services.

According to Alcatel Australia, the RIM unit offers Telecom a total solution, and will be a suitable platform for future broadband services.

Installation of the RIM units is expected to begin after field trials are completed in September 1992.

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S. Robert Levine
President & CEO

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104on information card

Remote DASD support from Techway

Techway has announced an extension to its RDS product range which gives users full remote support for rotating DASD devices.

This enhancement means the RDS product can support remote access to solid state DASD, and both cached and uncached rotating DASD.

Available from the company's High Per-formance Networking Division, the remote channel extension support for DASD (direct access storage devices) provides access to remote users at distances of up to 30km.

Using IBM local channel connection, disk access was limited to distances of around 120m, while IBM's ESCON announcement extended the distance to 9km. However, Techway's managing director Dick Webb said that Australian users typically require access over distances of 20 to 30km.

Other benefits include the ability to use spare DASD capacity in remote sites, and the capacity to view multiple site operations as a single virtual site.

Both IBM 3880 and 3990 DASD devices are covered by the new channel support, which can communicate using either 34M bits/s communication circuits or FDDI.

FDDI connection allows users to connect DASD to any host on the network, offering improved use of intersite bandwidth.

Techway, 18 Rodborough Road, Frenchs Forest 2086.

200 on information card

Isicad agency to MM Systems

MM SYSTEMS Engineering will be offering the powerful Command (communications management and design) software, following its appointment as distributor for Californian company Isicad.

Command is an interactive CAD and database system that provides control over voice, data and video communications assets within a corporate facility.

It was developed in response to the increasing volume of communications cabling, devices and other resources found in companies, and offers integrated management of all the information associated with the communications environment.

The software supports a wide range of activities, from design and installation through to day-to-day change management and on-going documentation.

It features an interactive link between graphic and non-graphic information used to describe the communications environment. Drawings, schematics, connection lists and work orders can be easily accessed, and changes can be documented and reflected immediately in both graphic and alphanumeric information.

Opto TDR on a PC card

Kingfisher International has released a test system designed to offer convenience for users of optical systems.

The Antel OTDR (optical time domain reflectometer) is a fully featured unit that can be plugged into a laptop or dekstop PC for reduced cost and convenient use.

Antel's AOC-10 series has been recently upgraded to include singlemode versions, as well as the existing multimode types.

The multimode version is available at 850 and 1300nm, and offers a 5m dead zone, 5cm resolution and up to 19dB optical range.

A sophisticated suite of software allows easy loss measurement, splice measurement, waveform storage and comparison. A range of printers is supported for hardcopy output of test results.

Kingfisher International, 4/19 Viewtech Place, Rowville 3178.

201 on information card

Voice activated computers

Continues from page 1

financial data needed to make a deal, or asking the computer to get a buyer or seller anywhere in the world via a phone.

FINE-Voice Trader lets the dealer ask for a wide range of information as needed, and automatically takes it off the screen when it is no longer required.

Verbex is a system developed in the US that recognises a few single words. It has been refined by AFS to understand quickly spoken sentences.

Research in the industry developed a grammar to suit the application. The application is created with a defined vocabulary of words, phrases and grammar in a structured format via a compiler that generates information through the Verbex unit.

Being a speaker dependent recognition system, each user needs to train the system to recognise individual voice patterns.

The user simply says each word in the vocabulary and then interactively repeats generated phrases. This process trains the system to recognise the voice patterns by building images of words and phrases in digital patterns.

Verbex data entry uses a telephone handset or a microphone headset.

According to AFS, Verbex applications have achieved more than 99.5% accuracy per word and 98% accuracy per transaction, including all errors made by the operator.

Two Verbex versions are available from AFS. The Series 6000 is an AT bus board and has speech recognition processors. It uses the computer's power supply and hard disk.

The Series 7000 is a standalone unit which has synthesised response for both prompting and verification. Voice files are stored on cartridges. It interfaces to the host via RS232 at up to 9600 bits/s.

Apple, IBM alliance signed

October saw the formal signing of the technology alliance first announced earlier this year by computer giants Apple and IBM.

Under the alliance, Motorola is to play a key technology role, working with the other two companies to create a new family of Risc (reduced instruction set computing) microprocessors, the PowerPC chips, which will form the basis of a new architecture.

The chips will be designed by Motorola and IBM engineers, and will be sold to the industry by Motorola.

Within the next two to three years, Apple and IBM expect to be using these chips to drive a new family of personal computers based on the PowerOpen environment.

Created by licensing agreements between the companies, PowerOpen is derived from IBM's AIX Unix implementation, Apples Mac interface, and the Power Risc architecture.

This environment will allow systems to run both Mac and AIX applications on Risc hardware from both companies.

However, one of the most immediate results of the alliance will be an improvement in the internetworking capabilities of Apple and IBM PC machines.

The two companies will be working together to develop new products to integrate Macs into IBM networks, and expect to be releasing their first products as early as December this year.

There are five areas covered by the networking announcement.

Firstly, AppleTalk services for OS/2 will allow Mac, OS/2 and DOS personal computers to share files, query corporate databases, and access communications services through a common OS/2 server.

The second part of the agreement is Apple's licensing of IBM's Token Ring technology for use in a product expected to be released later this year.

Large enterprise networks are covered by developments to make Macs participate more fully in IBM's SNA, and Mac users will get full access to advanced peer-to-peer networking (APPN) directory and routing services.

Network management integration will allow better management of mixed PC/Mac networks, with management for Macs either by IBM's LAN Network Manager or centrally through NetView.

Lastly, Macs and IBM's AS/400 midrange systems will get better communication, to improve access to AS/400 data and application resources. Mac enhancements will include terminal services as well as the more advanced client/server functions of the AS400.

Apple will also implement its data access language, an SQL technology, for the AS/400.

Other developments announced under the alliance include two joint ventures. One, to be known as Kaleida, will work on multi-media technologies which will be licensed back to the partners, while the other, Taligent, will concentrate on object-oriented programming platforms.

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Little wonder Ansett Australia's choice of a communications company to link its computer operations is JNA.

JNA is the Network Integration company that is making a name for itself in design, manufacture and installation of open system networks. JNA builds networks for the future, based on international standards, ensuring multi-vendor access.

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105 on information card

LabView now operates under System 7

National Instruments has announced LabView 2.2 graphical programming software, a new version for Apple Macintosh machines operating under System 7.

LabView 2.2 includes control features that support Macintosh software drivers. The software responds to Apple events like open application, open documents, print document and quit application. The user can use these events to automate test systems.

Test executive virtual instruments (VIs) can be written that dynamically load and unload other VIs. This feature allows the user to run large tests without having all VIs in the memory at all times.

As well, LabView 2 control panels can be customised using large point sizes with outline fonts.

Several new controls have been added to further customise front panels. These include table, custom PICT slide and alarm slide controls.

Digital signal processing and advanced statistical routines are also included. A set of finite impulse response coefficient and frequency synthesis filters address realtime analysis and design applications.

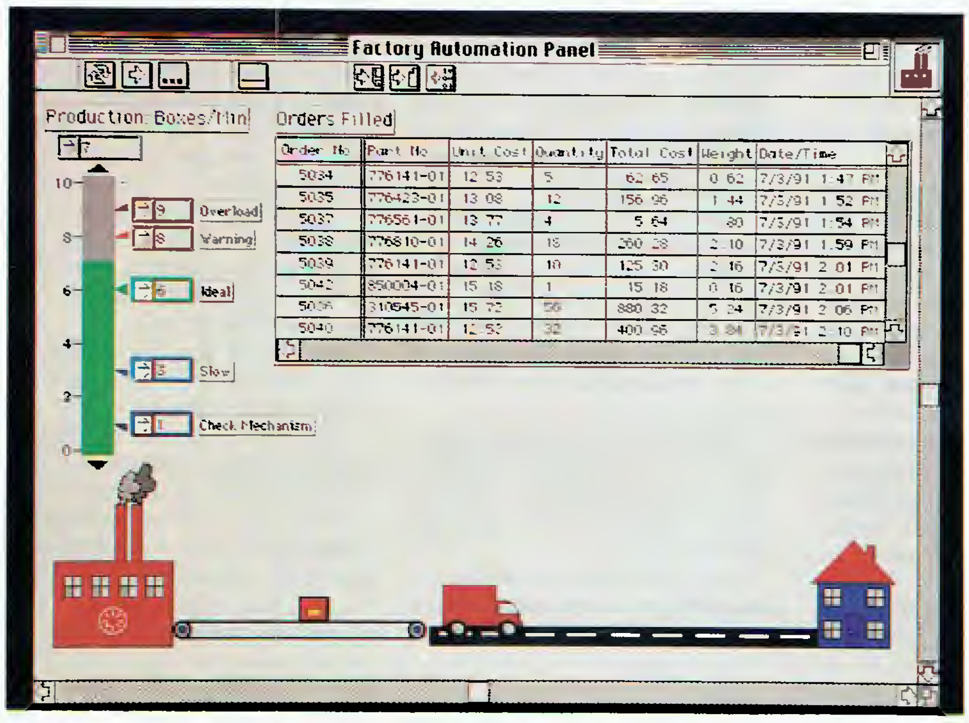
The LabDriver VI library has been enhanced to support the LAB-LC, a multifunction analogue, digital and timing I/O board for the Macintosh LC.

GPIB instrument support is now possible with the NI-488.2 VI library. Fuctions implemented by these VIs adhere to the controller sequences and protocols defined in the IEEE488.2 standard.

New VIs can address multiple instruments, find all listeners, generate system level tests and resets, find a device requesting service, and determine the status of the SRQ line.

National Instruments, 1 Colin Avenue, Park Orchards 3114.

215 on information card



Orders Filled

Order No	Part No	Unit Cost	Quantity	Total Cost	Weight	Date/Time
5034	776141-01	12.53	5	62.65	0.62	7/3/91 1:47 PM
5035	776423-01	13.08	12	156.96	1.44	7/3/91 1:52 PM
5037	776561-01	13.77	4	5.64	.80	7/3/91 1:54 PM
5038	776810-01	14.26	18	260.28	2.10	7/3/91 1.59 PM
5039	776141-01	12.53	10	125.30	2.16	7/3/91 2.01 PM
5042	850004-01	15.18	1	15.18	0.16	7/3/91 2.01 PM
5036	310545-01	15.72	56	880.32	5.24	7/3/91 2.06 PM
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106 on information card

Printer interface cards support LANs

Hewlett-Packard has announced Microsoft LAN Manager and IBM LAN Server support on five network printer interface cards.

Users can now connect HP LaserJet IIISi, III, IIID, IID and Series II printers directly in a PC LAN.

The interfaces are designed for Ethernet or Token Ring networks running under Novell NetWare or LAN Manager including 3Com 3+ Open 1.1, Microsoft 2.0 and later versions, and Token Ring for IBM LAN Server 1.3 and later versions.

With the interface card installed in the optional I/O slot, the printer can be connected anywhere in a network. This location flexibility eliminates the need for direct connection between the printer and a file server.

The Microsoft LAN Manager and IBM LAN Server interface cards for the 17ppm IIISi printer receive data at 200Kb/s, which is 15 times faster than the parallel interface.

The cards for 8ppm printers receive data at twice the speed of the parallel interface.

To further improve network performance, the cards allow the printer to act as an intelligent node on a network.

The HP software included with the cards is designed to work within the OS/2 print manager utility. This integration makes installation and printer reconfiguration transparent for network administrators.

The software also provides an error log and determines network printer errors from the server screen.

Hewlett-Packard, 31-41 Joseph Street, Blackburn 3130.

216 on information card

FTAM, CMIP for OSI protocol analysis

TEKELEC Australia is offering file transfer and access management (FTAM) and common management information protocol (CMIP) applications as options to its Chameleon 32 and 20 diagnostic systems.

The new options extend OSI interoperability testing capabilities for developers and network managers of multivendor networks.

Both options can be used as supplied for multivendor network analysis, or they can be modified using the company's protocol monitoring development system (PDMS) software.

The PDMS consists of an ASN.1 (abstract syntax notation 1) compiler, development tools, and a set of building blocks which are pre-written protocol stacks such as HDLC, X.25, X.225, X.224, ROSE, and ASCE.

Applications available as options include the OSI session and transport layers, Group 4 fax, X.400 and TCP/IP.

The Chameleon 32 and its smaller, portable version, Chameleon 20, are ISDN diagnostic tools used for troubleshooting multiple data protocols including X.25, SS7 and ASAI.

Tekelec Australia, Suite 14, 41-45 Rickard Road, Bankstown 2200.

217 on information card

W&G extends DA-30 capabilities

Wandel & Goltermann has added T1, frame relay and Turbo Token Ring internetworking capabilities to its DA-30 dual analyser instrument system.

The T1 interface plugs into any interface slot in the DA-30 backplane, in the same way as the existing LAN and WAN interfaces.

With this interface, the DA-30 can better monitor and test LAN to T1 links using frame relay, as well as other LAN to LAN and LAN to WAN bridge, router and gateway combinations.

Any combination of T1 channels (DSOs) as the fractional set can be specified. These can be adjacent channels, alternate channels or any arbitrary set of channels. The interface runs at the full 1.544M bits/s.

Also, frame relay networks can now be monitored, analysed and maintained with the DA-30. Frame relay, a layer 2 protocol, is decoded by the frame relay layer protocol package. This package enables the instrument to display both summary and frame details.

The frame relay applications consists of related applications which monitor and filter frame relay traffic and other applications that monitor local management interface (LMI) information.

The Turbo Token Ring performance comes from a technology licensing agreement with Madge Networks.

The Fastmac Token Ring microcode improves the performance of the Texas Instruments' Token Ring chipset used in the DA-30 Token Ring interface.

Wandel & Goltermann, 42 Clarendon Street, South Melbourne 3205.

218 on information card

Enhancements to Datability communication server

ADE Network Technology has announced enhancements to the Datability VCP 1000 communications server to include an X.25 pad card and a range of network cards.

The X.25 pad is a full function card that integrates the hardware and software required to support bidirectional WAN/-LAN X.25 connections to LAT and TCP/IP systems.

Housed within the VCP 1000 modular communications platform, the pad reduces the amount of equipment and cabling required to connect LAN and WAN users.

It provides 64 virtual circuits and supports speeds up to 64K bits/s.

As well, LAT, TCP/IP and dual protocol network interface cards have been released for the communication server.

These enhanced network interface cards (E-NICs) increase the performance of the server and provide optional 10Base-T support for large multi-protocol network sites.

The E-NIC's double the port density capability of the VCP 1000, accommodating a maximum of 256 users.

Memory management is enhanced with a custom gate array logic incorporated in the cards. ROM card architecture is featured for optional network down loading, booting and protocol expansion and upgrades.

It can also be equipped with an optional 10Base-T interface, along with standard ThinWire and transceiver Ethernet connections.

The VCP 1000 is a modular communications platform that combines network access for connectivity strategies. It provides interconnectivity between DEC and Unix systems, X.25 modems, PCs, printers, asynchronous terminals and IBM hosts.

ADE Network Technology, 2 Dublin Street, East Oakleigh 3166.
220 on information card

LAN cable troubleshooter

Computer Systems has introduced Microtest's Next Scanner, a handheld cable tester that automatically tests and certifies LAN wiring.

Once the cable and network type are programmed into the scanner, the instrument automatically compares the test results to a table of expected results of the network.

It indicates if the cable will support the application and indicates reasons for cable failures.

The scanner certifies whether new or existing wiring will support Ethernet, 10Base-T, 4/16M bits/s, and Token Ring and ARCnet networks.

For example it can determine if the existing 4M bit Token Ring cabling can be upgraded to 16M bit.

The Next Scanner uses a patented technology to perform TDR tests. It measures cable length, resistance, noise and distance to faults.

It monitors LAN traffic, maps wiring connection and activates 10Base-T hubs, as well as measuring near end crosstalk (NEXT) attenuation.

Records of cable parameters and test results are kept up-to-date with the optional cable management system (CMS). It assists the network administrators with adds, moves, changes and in troubleshooting the network.

Flash memory is included with Extend software. This allows software upgrades like new certification enhancements and options.

Cable certification results and long term network monitor activity can be printed for hard copy. The test results can also be saved to the memory and downloaded to the CMS.

Computer Systems, 2/60 Griffiths Road, Lambton 2299.
221 on information card

PC based HF remote comms

GFS Electronics has integrated its CPU 100 modem with Paktel's HF data communication system to provide an error free high frequency radio, fax, data and telex communication system.

The Paktel HF data communication system has features that allow communications over long distance between remote and widely separated locations.

Using menus, users can send data files, special forms, morning reports, fax, computer programs and telex messages.

Paktel's "on the fly" data compression and expansion coupled with the CPU 100 radio modem's error correcting features ensure high data transfer rates.

Messages can be created with an in-built or standard word processor and manually or automatically uploaded via HF radio link, radio telex, line telex, line modem or satellite circuit.

A station with an HF modem and line or telex modems can be used as a gateway or for rerouting data between these communication mediums.

This feature provides a remote station access to the worldwide public switched telephone network or telex network.

Minimum configuration includes an 80286 PC or higher with DOS 3, 640Kb RAM, hard disk, one serial and one parallel ports, CPU 100 radio modem, HF radio transceiver, antenna system and the Paktel software.

GFS Electronics, 17 McKeon Road, Mitcham 3132.
222 on information card

Second generation bridge

THE ETHERMASTER 100 from Integrated Networks is a second generation bridge offering advanced features and industry standard network management.

With 32 bit architecture, the EtherMaster operates at full network speeds and complies with simple network management protocol (SNMP).

It features spanning tree support and filtering capabilities with protocol masking.

The transparent bridge is powered by a 16MHz Intel 80386 CPU, interfacing to attached network segments via Ethernet controllers.

Up to 512K combined RAM and EProm provide spanning tree protocols and continuously updated routing table information.

For applications requiring redundant bridges, the EtherMaster 100 supports the IEEE802.1 spanning tree protocol.

Bridge management functions are enhanced by allowing filtering on protocol type, source and destination addresses.

This MAC-layer bridge operates at the data link layer. It is transparent to all higher level protocols including TCP/IP, DECnet/LAT, XNS, ISO, Novell NetWare, 3Com, Banyan and other network operating systems.

Integrated Networks, 26 Tepko Road, Terrey Hills 2084.
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107 on information card

Government departments adjust to the OSI reality

by Gillian Sidebottom

As the Commonwealth Government moves to establish a more open environment in its computing infrastructure, the Australian Gosip (Government OSI Profile) procurement specification, developed under the aegis of the Information Exchange Steering Committee (IESC), now plays a major role.

While the commonwealth government's Industry Statement of March 12, 1991 (Building a Competitive Australia) commits the commonwealth to move to open systems and OSI networks, the consolidated statement on IT is more specific:

"...agencies are to achieve a full implementation of the Open Systems Interconnection (OSI) standards in their networks in a timely and cost effective manner and without disruption to Government programs..."

> *"The Department of Primary Industry and Energy is particularly well placed for an OSI-based future"*

The statement also says that "...agencies are to migrate to vendor-independent, open systems based on international standards as quickly as practicable in accordance with standards to be endorsed by the government."

All government departments and agencies are under increasing pressure to save dollars and become more accountable; aims in which, in the longer term, Gosip will be an important factor.

However, Gosip does not lay down the law, it merely provides the general direction for government computing in the future.

Gosip directions

So what exactly does the directive require of government departments and what have been the effects so far?

Allan Maclean, principal advisor in the Financial Management Division of the Department of Finance, summarises the implications of the Gosip policy:

"First it requires all suppliers to offer Gosip compliant products from August 1, 1991 in responding tocommonwealth tenders. Also, all government departments will have to show how they intend to implement OSI standards on all their networks unless there are compelling reasons to otherwise.

"Policy does not require retrospective conversion of existing networks, but does not discourage such conversions. It also recognises that cost effectiveness is an important factor in determining the most opportune time to convert.

"Finally, it mandates the use of OSI standards for interdepartmental communication and, eventually for all communication between the commonwealth and external organisations."

While these are still early days, it is already apparent that the extent to which different departments will be required to change their ways from pre-Gosip days will vary considerably.

For instance, in the Department of Primary Industry and Energy (DPIE), a concerted move towards open systems predated the Gosip announcement. In many respects, the Gosip statement merely consolidates the work that has already been done in this area.

"In DPIE, we are seeing a fairly quick move away from proprietary systems at the same time as vendors are rushing to "open up" their proprietary systems," says Jonathan Potter of the DPIE.

"Because the DPIE comprises a number of business departments which are largely responsible for making their own IT decisions, we had already determined that DPIE is particularly well-placed for an OSI-based future."

A similar situation exists in the Australian Bureau of Statistics (ABS), although an expression of interest soon to be issued to suppliers for the upgrade of the bureau's LAN and WAN would not necessarily have specified OSI in pre-Gosip days.

While some government bodies are well positioned to meld the Gosip requirements into existing IT strategies, for many of the larger departments it could prove to be much harder.

"Most of our software and hardware requirements are already available in an open systems environment," Mr Potter.said. "However, for departments with very large proprietary investments in hardware and software, such as the Departments of Social Security and Health and Community Services, migration may be a much more difficult and complex task."

Probably the most advanced along the Gosip path is the Department of Defence, spurred on by the need to establish effective communications between the wide variety of hardware and operating platforms in the department.

Ten years ago, a working party started to look at an OSI future, and the 1989 Desine contract clearly specified OSI as the overall direction. The fact that the short term solution turned out to be proprietary IBM has no bearing on the final target.

"There are two lists of products under Desine," said Kim Fenley of HQADF, CIS Branch. "One list containing Gosip/OSI products (hardware and software) from IBM and its third-party suppliers and one for products required to support the Gosip/OSI computing infrastructures (operating systems, multiplexers, modems etc.)."

From the defence point of view, Gosip means the full seven layer OSI model and, if it is not possible to implement a Gosip topology, then the infrastructure must allow for migration to OSI as and when products mature.

"In some cases, it may be possible to implement to level four (Transport Layer) – the break between the communications and applications areas – but more often than not, the full seven layers will be required," adds Fenley.

Much of defence's OSI work centres on its extensive local area network infrastructure. The lower layers of OSI implement Gosip in LANs through Ethernet, Token Ring and FDDI, and LANs are seen as an OSI area which is maturing well.

However, some major projects involving the department's large mainframes are already in hand.

FTAM trials, for instance, provide links with Canberra and Melbourne and with the Department of Finance. X.400 is also being looked at for the wider implementation of e-mail and allied interoperability.

Other areas of Gosip/OSI at the applications level will be implemented as and when the standards reach IS status. However, not all standards will be implemented.

An example is Virtual Terminal (VT) as this standard is currently deficient in the graphical environment that exists today.

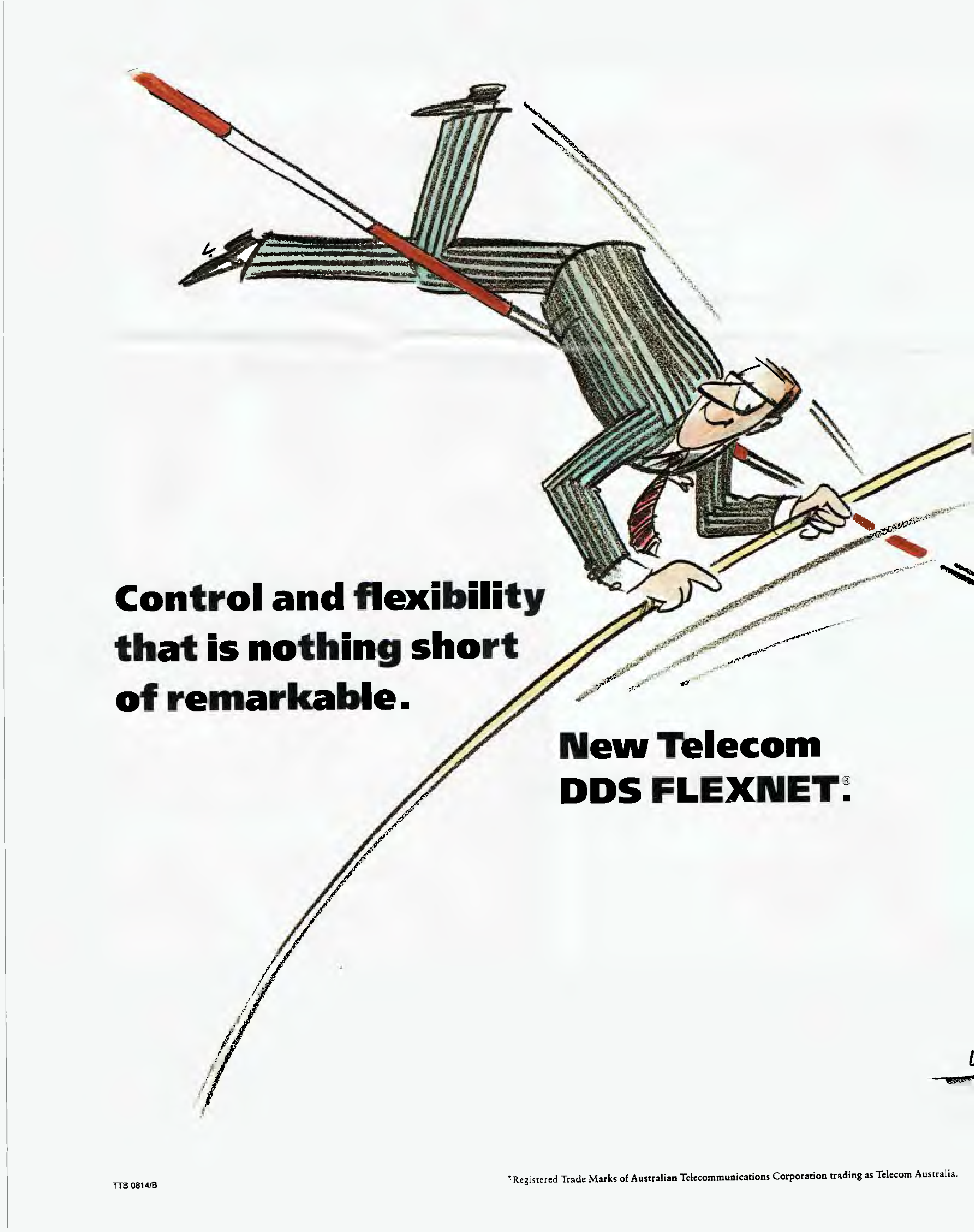
ISO is in the throes of rectifying the problem and defence will implement VT once set in concrete as VT is essential in an OLTP and PC environment.

Cost effectiveness

Cost effectiveness, as one of the fundamental requirements for government departments' Gosip plans has been redefined by finance to incorporate full life cycle costs, as opposed to the short term benefits of the proprietary solution.

This is a major driving force in the wider implementation of Gosip, led in many ways by the Department of Defence.

But there is little doubt that, for all departments, Gosip imposes a large overhead and adds to the general complexity in IT decisions. Exemptions from having to comply will be based primarily on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the cost of changing the existing network, but are likely to be rare.

"Departments will receive no supplementation from the budget to implement Gosip, but are expected to find the funds from already tight budgets," says ABS senior consultant Keith Perger.

Gosip planning

All government departments and agencies are required to complete a Gosip strategy by the end of the year outlining their migration plans to implement OSI standards on all their networks.

However, the level of detail to which these plans can go is restricted currently by the limited availability of OSI-compliant products and, of course, the incompleteness of many of the OSI standards themselves.

The requirement for individual agencies to formulate OSI migration plans grew out of a recognition that, with all the different computing and applications environments, it would be impossible to impose a uniform approach.

> *"Many of the Gosip standards are still embryonic..."*

The IESC's task is now to encourage and maintain a supportive environment with the dissemination of good practice and the support of the local industry.

According to Keith Perger of the ABS, one of the obstacles to immediate progress along Gosip lines is the lack of information from the Department of Administrative Services (DAS) on what exactly is the present minimum requirement in the government's definition of Gosip.

"Currently, it is a broad-based implementation covering all OSI transport protocols, FTAM and the message handling system. Few Government departments can, or want to, migrate all of their existing systems to meet all of Gosip V.2 in the short term, not least, because of the extra initial cost it would incur."

While believing that ultimately the Gosip directive will make life easier for her own and other departments, Judith MacKay of DPIE stresses that there will be an interim period during which it will be virtually impossible to comply fully.

"Many of the Gosip standards are still embryonic, to say the least," she points out.

"Various working parties, some of which have still to be set up, have a lot of work to do on, for example, naming and addressing, TCP/IP and the preparation of a Gosip implementation guide."

However, while it will be some time before all the standards are set in concrete, the general direction is clear.

While ABS's Keith Perger agrees that the benefits will be longer term, he also suggests that DAS has to set up a working party to look at the ongoing Gosip development.

"What really needs to be looked at is where Gosip is going in the future. It is a very fast moving area and Australian Gosip must keep in step with overseas Gosips."

Skills and training

Training in, and development of, OSI skills of those who will actually be implementing and using OSI-based networks is a critical issue and an ongoing task.

According to DPIE's Jonathan Potter, training providers currently tend to focus primarily on the more philosophical aspects of OSI networking. A more practical emphasis on how to create an OSI-based IT specification will come with time, he suggests.

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The supplier's view

This article looks at some of the key issues involved with Gosip implementation from the supplier's point of view. Mr Letts is JN Almgren's manager, consulting.

by Geoff Letts

There are two primary motivations for Gosip and the application of OSI to information technology (IT) in general: independence and economy.

Portability (at an application and operating system level) and interoperability (at a communications level) are intended to lead to vendor independence and free choice of IT products.

Under Gosip, computer systems vendors will no longer have absolute control in setting architectures for the IT environment, and Gosip's associated standards will provide for truly universal inter-networking.

Economy of systems is provided through the use of standards. With stable and well-defined procedures, manufacturers have lower development and construction costs, and they need to be price competitive.

The reduction in development and construction costs under nailed-down standards means that communications and even applications level code can be implemented in silicon; but the high initial production cost must be defrayed over large volumes of equipment or systems.

Both these motivations are centred on cost control.

There are also some secondary benefits which flow on from Gosip, such as the implementation of standard operational and test procedures, standardised user interfaces and procedures, and better defined performance and benchmarking capabilities.

Again, these could be related to bottom line costs.

Who controls Gosip?

Australia's Gosip implementation (AGosip) was largely imported from the UK, somewhat tempered by US Gosip and Canada's COSAC, and then slightly modified to reflect Australian input and recent standards directions.

As I understand the current gameplan, the implementation of a framework for AGosip has fallen to the Department of Administrative Services (DAS), which will set up common procedures for contracts and compliance assurance, and manage the technical aspects of AGosip.

The Department of Finance will preside over, and in effect enforce the adoption of AGosip as a whole, with an Acquisition Council required to review all government IT expenditures over $5 million.

Individual government departments will be responsible and accountable for implementing Gosip, with assistance from DAS. They will also be subject to review by Acquisition Councils.

Standards Australia will remain involved in the AGosip standards in an important stewarding role.

A major issue for AGosip is that despite current activity there was no real technical infrastructure developed in Australia to build and own AGosip from the ground up. The document was intercepted from overseas standards, and did not evolve gradually with the involvement of Australian industry and standardisation processes.

Hence, I believe that the true implementation and management issues of the protocol stacks is not understood by all in the Australian IT industry, and the ability to test or verify against AGosip standards is not yet present in this country, even on an informal basis.

DAS is trying to remedy this, and has recently asked industry to register interest as either a provider, developer or user of OSI conformance testing facilities.

Compliance

This raises the question of what compliance means, how it is assured, and the necessity of verification procedures if the Gosip strategy is to work.

The following means are available or proposed to ensure compliance:

☐ Protocol Implementation Conformance Statement (PICS): this is effectively a pro-forma defined in AGosip which covers OSI protocol implementation options for particular sub-profiles.

To complete a PICS, a supplier ticks a series of boxes to indicate conformance with basic standards and options.

☐ Implementer's agreements: these are not yet in much use in Australia, but there are shows and workshops which promote qualified OSI inter-networking. In Australia, these include OSICOM events, while Europe has

continues on page 11

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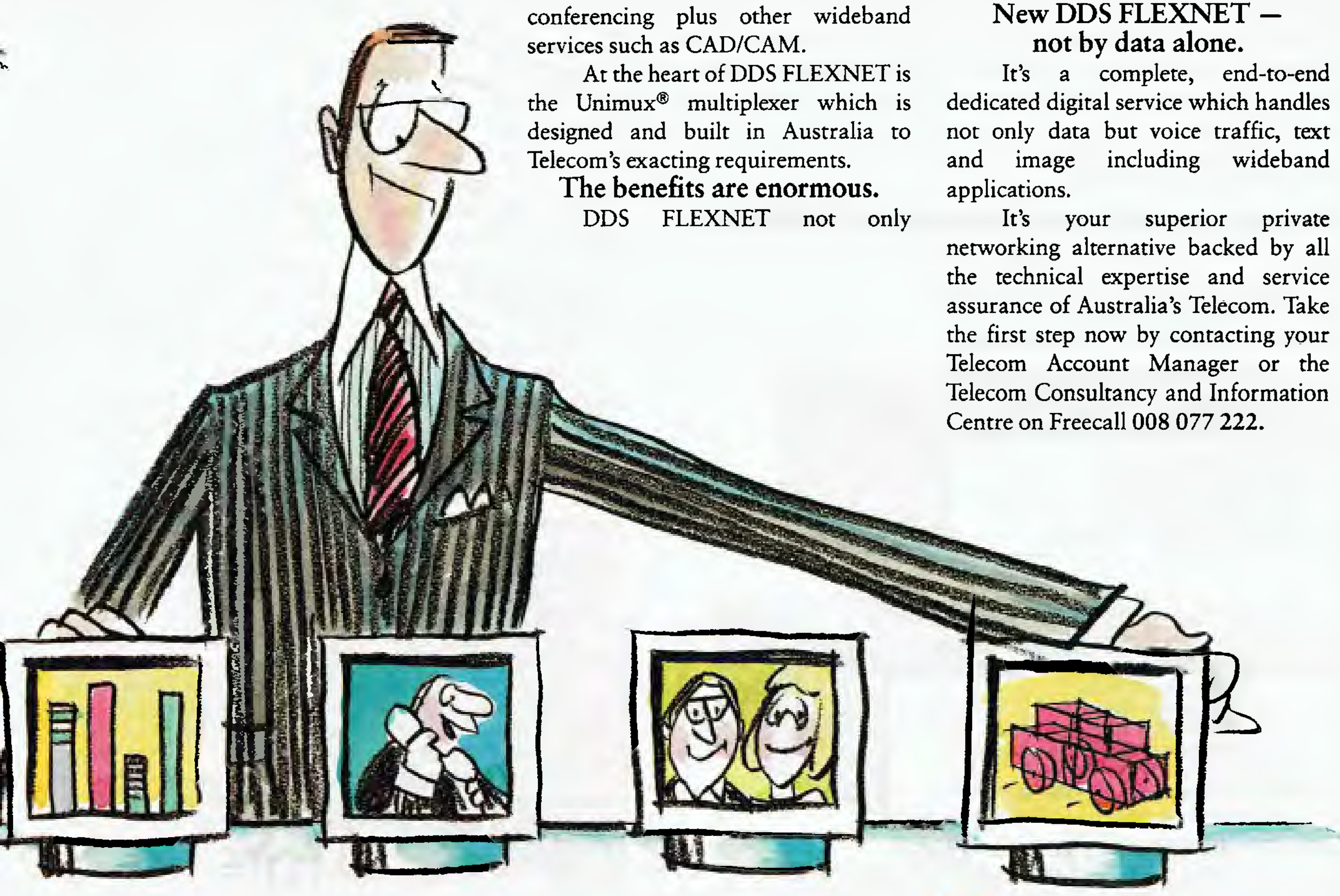

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The UK experience

an implementation case study

The largest extended LAN in Europe, IRON, provides a good example of the choices facing the Australian networking industry.

Installed by Cabletron Systems as part of a $110 million computerisation project, IRON (the Inland Revenue Office of the Nineties) has over 3000 concentrators/hubs. It has proven unique in UK government networking circles because of the department's need to run Ethernet protocols over the existing 75Ω coaxial cable frequently found in large government departments.

IRON was conceived when the department realised that it could exploit the flexible routing capabilities of the X.25 protocol to provide improved contingency cover for the 40,000 terminals that handle its COP/CODA (computerisation of pay as you earn and schedule D assessments) system.

This required mainframe and communications hardware and software changes, especially since the 20,000 oldest terminals would not work over X.25 without imposing severe restrictions.

The department had a clear need to access other computer systems, such as administration support, and this could most easily achieved using menus and windows.

In other words, the Inland Revenue required an office architecture based on Open Systems standards, comprising a number of server functions, such as communications, security, and managment. And they needed a LAN conforming to Gosip, with intelligent workstations.

Essentially, the IRON project has established a new distributed network of 25,000 intelligent workstations and over 900 Unix based server systems for the department.

Europe's leading information systems company, Bull, has implemented its latest open systems technology based on its range of Unix office systems, across hundreds of district tax offices throughout the UK.

Cabletron has provided a cable distribution system worth more than $11 million for IRON.

The intelligent workstations have replaced existing terminal equipment, providing staff with access to the mainframe-based COP/CODA applications, and aiding the development of a wide range of new applications.

These include computer based training, distribution of technical information from head office to inspectors of taxes in local offices, and other office automation facilities.

Cabletron has installed a Unix server in each office, linked to its MMAC eight slot intelligent wiring hub. Incorporating three Ethernet cards, the MMAC 8 typically gives 36 users in each office access to the network.

Non-stardard cables

Installing IRON's cable distribution system raised a number of questions for Cabletron engineers. While standard cabling for such installations is normally 50Ω type, all existing Inland Revenue offices used 75Ω cable.

The department is committed to a strategy of using existing cabling as much as possible, because it believes that the switch to standard cabling would be both disruptive and financially prohibitive.

It was also reluctant to replace its existing cables with twisted pair, only to see fibre optic cabling become the norm within a few years.

This meant that Cabletron had to put in a significant amount of work up front to ensure that the system worked efficiently.

Following theoretical engineering carried out in the US, as well as practical MCR tests, it was clear that the MMAC units would run Ethernet on around 90% of existing cables at Inland Revenue.

However, matters were complicated by another strategy which dictated that all new Inland Revenue offices must install UTP cabling. As with many government offices, the ability to use UTP cable was important for the Inland Revenue, because it is the least expensive option and is widely accepted as the most flexible and cost-effective medium available.

Cabletron therefore had to supply MMAC units that could cope with any media type. Should the department's network management strategy change, for example in a migration to fibre optics, it needed to guarantee that such a migration would simply require changing cards in the hubs. It did not want to have to change power supplies, hubs or the network manager.

Cabletron was able to demonstrate this flexibility from its installed base of MMAC hubs.

Another task facing Cabletron in the cabling solution was to provide a central location of network management capabilities that would also be available to individual offices in the network.

The department is committed to GDN (government data network), the UK government's WAN system, and to the X.25 protocol.

Cabletron's in-house design team adapted the existing network management software to sit within the strategic requirements of the Revenue's network manager, providing all hardware and software needed in this application.

While the initial IRON project involved the company installing 900 MMACs across 632 existing tax offices, Cabletron received an order worth more than $1 million covering new offices over a period of five years.

According to David Blythe, Cabletron Australia's national sales manager, Project IRON shows the suitability of X.25 WANs to meet Australia's dispersed geographic needs.

He said it proves that in implementing large scale networks of this type, network distribution equipment is crucial to uptime and cost of ownership.

Management, reliability and Gosip compliance, combined with a flexible and cost effective cabling strategy, is as vital and achievable in Australia as it is in the UK.

Article supplied by Cabletron Systems.

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The OSI reality

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Keith Perger agrees that more publications and guidelines are required to educate managers in government circles in what Gosip means and how to make the most of it, but admits that this would call for more funds than would be available.

Steps are being taken to address the skills problem. Recognising a lack of independent education as a threat to the wider implementation of OSI, an Australian non-profit industry consortium, comprising Standards Australia, OSIcom, the Australian MAP/TOP Interest Group (AMIG) and NSW TAFE Commission's Open College Network has launched a new independent, self-paced OSI learning program called OSI Essentials.

The program, to which Defence had significant input along with a range of other organisations, comprises four workbook modules. It was written by six industry experts and addresses business issues, technical issues, application and planning issues, and implementation issues.

In the modules, unbiased explanations are supported by real-world examples. A video complements the four printed modules.

OSI Essentials, distributed by Standards Australia, was launched in August, just after commitment to Gosip became mandatory for all government departments and agencies.

Defence has been quick to take up a corporate licence for the program and is also looking at making a CBT (Computer-Based Training) PC package for individual distance learning.

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Gosip, OSI for Chameleon

Tekelec's Chameleon 32/20 data protocol test systems now have OSI test capacity, with the release of the OSI Analyser add-on.

This allows protocol developers and network managers the ability to test complete OSI interoperability standards on multi-vendor networks. As well, to meet the need for Gosip testing, the company plans to provide testing capabilities for all standard applications defined under Gosip.

Applications supported with the first release of the OSI Analyser include X.244 and X.255 monitoring, and full protocol stack support for X.400 and G4 fax. Other applications include FTAM, CMIP, ROSE, ACSC and CNLP.

Although the analyser was developed to test standards, it offers a high degree of flexibility, with an OSI configuration/development system available which both users and developers can access.

Protocol stacks can be configured on existing building blocks provided by Tekelec.

Developers can customise or develop any standard or hybrid protocol stacks using an ASN.1 (abstract syntax notation 1) compiler, which is included as part of the OSI configuration/development system option.

They can also link protocols developed in the C language to the OSI Analyser's building blocks to make complete customised stacks.

Using the OSI Analyser option allows users and developers to test OSI protocol stacks over many different link layers available to the Chameleon 32 system, including V series, ISDN and X.21.

Tekelec Australia, Suite 14, 41-45 Rickard Road, Bankstown 2200.

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Intelligent RS232 card

APC has released an intelligent 8/16 port RS232 card suitable for asynchronous communications.

Up to 64 users can be connected by using up to four 16 way cards in a host PC.

The card supports MS-DOS high level language function calls, allowing applications to interact with local or remote asynchronous terminal, videotex server, modem or serial equipment.

It is supplied with one or two external connection boxes, each containing eight DB25 connectors. A ribbon cable connects the external termination panel to the board.

Device drivers are supplied to support SCO, Unix, Xenix, Iteractive 386/ix and AT&T Unix. As well, it has MS-DOS support for C, Quick, Basic, Turbo Pascal, Clipper and Assembly languages.

Automation & Process Control Services, 12A Church Street, Bayswater 3153.

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The supplier's view

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the Telecom shows and the US has the less OSI-focussed Interop show.

☐ Conformance testing: conformance tests are conducted against a protocol model to ensure that a product meets the formal requirements defined either in the base standard or in another standard to which the product is claimed to conform.

☐ Interoperability testing: ensures that the product will actually internetwork with other systems as intended. In the US, this is covered by NIST, while in Australia, OSICOM will probably address interoperability testing using standard test cases.

☐ Trademarking: this is equivalent to Under-writers' Laboratory marks, and relies on bodies such as COS in the US or SPAG in Europe to establish schemes with manufacturers to validate their OSI compliance, and indicate this with an appropriate mark. Ultimately, an auditable self-approval process could apply to this type of test, as it does with other standards trademarks already in use.

Because Australia is still to implement formal testing, several issues arise for both suppliers and consumers.

For example, both suppliers and consumers need to know that PICS pro-formas, as completed and submitted by vendors, need to be trusted and enforceable. Verification of PICS proformas is especially difficult in the absence of formal testing facilities.

As well, the industry needs to gain confidence that the staff in government who will be assessing proposals are skilled enough to interpret the real impact of a conformance statement.

For example, will a cheaper product that does not support all the options of a sub-profile be more cost effective in a particular application than a product which has "more ticks in more boxes"?

Will there be a ready source of conformance testing in Australia, and what will it cost? Suppliers need to know how to calculate for a return on their product developments, when there is a potentially unknown effort to ensure conformance.

Even when conformance is established, conformance doesn't guarantee interoperability. In fact, conformance testing only proves that procedural aspects are met at an interface level; so how can it guarantee that applications are going to work fully end-to-end?

For example, if I intend an X.400 MHS message to be multicopied and delivered to recipients over a network, how can this be tested against a model? MHS is a delivery service rather than a realtime interaction.

Interoperability testing on the other hand appears to be opportunistic, and relevant only on a limited application, or on a case by case basis.

Although a register would slowly be built up, suppliers need to know what happens as models change and software is upgraded.

The length of validity (essentially the lifetime) of the conformance tests is also a concern, since evolving standards may require further tests on a product already approved.

Likewise, changes to a system or its software may affect the lifetime of a conformance test result, so there will need to be strategies both at the supplier end and at the government's end to minimise the cost of testing and retesting products.

The response of the private sector, particularly large corporations and major industry user groups, is also important to suppliers. Will they embrace Gosip, or will they pay less for high quality but non-Gosip architectures?

Another question that needs to be answered is how proprietary IT or network architectures, which provide a gateway or external interface to OSI protocols, fit in. Although possibly not in the spirit of Gosip, this may be viable as a migration path to Gosip.

Lastly, the industry will need to know whether self-conformance will ever be acceptable, and what organisations in Australia will be supporting trademarking for indicating Gosip compliant products.

What's not covered

There are also several areas addressed but not clearly defined by AGosip, mostly because they are still immature in the OSI standardisation process.

☐ Management services: the OSI management standards are still not stable. The ubiquity of the Unix operating system has fostered the spread of TCP/IP architectures, which use SNMP as an open management standard.

So, not only is the OSI standard not complete, it will eventually have to displace a successful, although less sophisticated, competitor.

☐ Security services: Gosip does not lay down which security services or mechanisms may be required for particular applications, although it can be argued that it should not attempt to.

☐ Naming and addressing conventions: the OSI network address is based on the ISO DCC scheme, but how is this managed? This is often the last consideration given to network design, but it should increasingly be considered for supporting interconnection to any open network. The use of address translation gateways should be avoided.

☐ Registration procedures: further to the naming and addressing issue, Standards Australia is looking at the role of providing a register of addressing and naming.

Perhaps the biggest exception in Gosip's coverage is the utilisation of programmable interfaces, so that application programs can talk to each other and to lower level services.

There is a major thrust in this area by the Open Systems Foundation (OSF), through the DCE (distributed computing environment) specifications. The DCE work includes nailing down API definitions, and data and service structures.

With the penetration of intelligent workstations through the IT environment, and increasing business dependence on intra-LAN and inter-LAN communications, the portability and interoperability of applications will be vital. Gosip must assert a role here to be complete.

The migration path

DAS is planning to partner the formal Gosip policy with a document covering the technical interpretation of compliance, and to co-ordinate with government agencies and suppliers on both short term and long term plans.

In practice, most existing networks will need to establish a migration strategy towards Gosip. This strategy will be tempered by the short term development needs of the agencies, and perhaps by the threshold of expenditure that attracts a Gosip directive.

Because of the need to modify existing networks, the role of OSI mediation devices will be important in the short term.

These devices are typically networking components that use an OSI architecture, but are capable of supporting non-OSI protocols and transporting them efficiently over an OSI network.

The non-OSI protocol support may extend to such techniques as poll spoofing and local emulations, to ensure that high performance is obtained.

Final concerns

Gosip presents a challenge to IT vendors to differentiate their products and end user benefits, whilst fitting in with standards. But this is a positive concern for the customer.

The international nature of Gosip is an important long-term consideration.

When, if ever, will Gosip be truly international? A single international version would provide for lower costs and broader acceptance, but it could result in Australia losing control of the standardisation process.

Would this be in the national interest? Would we see multinational manufacturers dumping product into the Australian market? Or would we. standards, have the opportunity for Australian industry to provide international products, if only for niche sectors, to the world market?

There are already a number of centres in Australia where OSI products are being actively manufactured, for example, JN Almgren and Datacraft. As well, some transnationals, such as Unisys and DEC, are developing core OSI products at their Australian R&D sites.

Perhaps the forces of Gosip policy for public sector business, the possible adoption of Gosip for major private sector corporation purchasing, and a guaranteed trend towards a single international set of OSI implementation standards, will shake some good out of the Australian IT industry, and Australian products will meet world standards.

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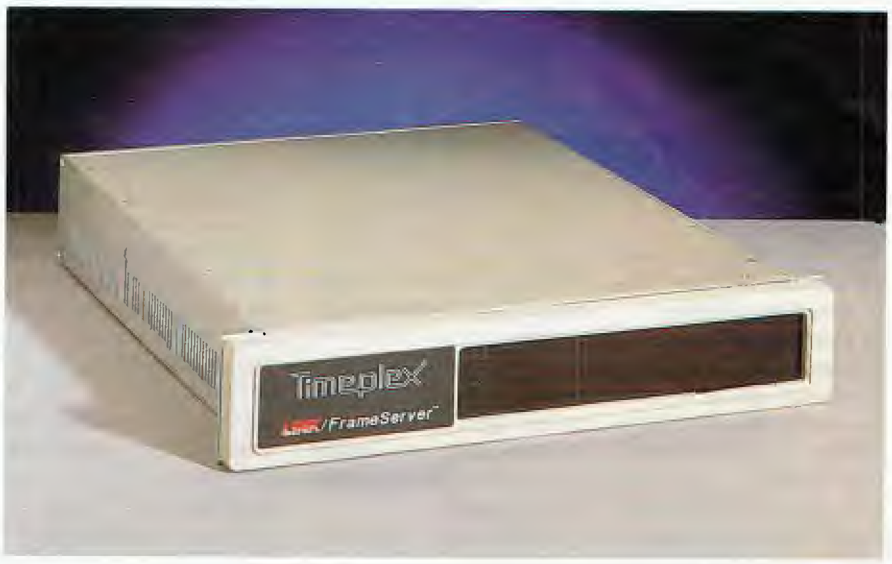
Frame Relay products to keep momentum for Timeplex



Having taken its LAN internetworking presence to a claimed 7% worldwide market share from nothing a year ago, Timeplex is aiming to keep its growth moving along with the release of a Frame Relay product range.

Along with the Frame Relay releases, the company has introduced a consolidated network management system that manages both LANs and WANs from a single workstation.

As well, Timeplex is responding to the increasing complexity of data communications by launching a full range of network services, from design assistance to complete outsourcing.

Timeplex's Frame Relay products are designed to provide access both to private and public Frame Relay systems and services.

The company's Frame Relay strategy is focussed around three products in the initial release: the LINK/FrameServer and standalone FrameServer; and a Frame Relay option for the TIME/LAN 100 Router/Bridge.

The LINK/FrameServer and FrameServer allow WAN users to provide bandwidth to LANs on a demand allocation basis. This is designed to maximise LAN application performance, while minimising WAN costs.

"The Frame Relay products work by dividing up time sensitive data, such as digital voice, and demand sensitive data such as computer applications," said Drew Kelton, Timeplex Australia's business development manager.

"We find that this offers users up to 40% bandwidth savings without degrading their performance.

"The bandwidth saved by users can either be "cashed in" by reducing the capacity purchased from Telecom, or it can be used to expand a system's capacity."

According to Timeplex, the products allow true Frame Relay networking over existing private lines, by providing data frame multiplexing and switching capabilities for wide area backbones.

They also reduce the amount of bandwidth required to support existing synchronous data devices.

As a data frame multiplexing shelf within the Timeplex LINK+ networking system, the LINK/FrameServer provides direct connectivity for Frame Relay devices, HDLC and SDLC devices, and LAN traffic using Ethernet, Token Ring and FDDI.

This hybrid arrangement is designed to give efficient transport of "bursty" traffic, while delay sensitive traffic such as voice and video is multiplexed using non-blocking dedicated bandwidth.

Existing Timeplex LINK networks can be upgraded for Frame Relay traffic simply by adding the LINK/FrameServer product.

The standalone FrameServer can be used as a data frame multiplexer for other vendors' T1/E1 systems, or as a concentrator for HDLC, SDLC or other Frame Relay devices.

Where Frame Relay access is only required for LAN internetworking traffic, the TIME/LAN 100 Router/Bridge Frame Relay option provides wide area interconnection for Ethernet, Token Ring or FDDI.

This multi-protocol device provides virtual pathways to multiple remote locations using a single interface to reduce network access costs.

Integrated with the interface is an HDLC/SDLC transport capability, allowing users to consolidate LAN and SNA traffic for transport over a single circuit.

SNA is encapsulated directly in Frame Relay, to reduce the costs currently associated with router bridge SNA tunnelling methods, and to minimise the network throughput delay.

All three products conform to ANSI and CCITT I.122 standards.

The LINK/FrameServer, FrameServer and TIME/LAN 100 Router/Bridge are managed by Timeplex's SNMP-based TIME/LAN 100 element management system, which is now resident with the TIME/VIEW 2000 NMS.

This allows users to manage local and wide areas from a single platform.

The network management system provides windowed monitoring of all of the Frame Relay products, and also offers topological viewing and alarms for LINK+, LINK/100+ and TX/3SuperHub systems.

Operating on a Sun SPARCstation platform, the TIME/VIEW 2000 NMS reports to a variety of integrator products including AT&T's Accumaster and IBM's NetView.

Timeplex Australia, 10th Floor, 213-219 Miller Street, North Sydney 2060.

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Banyan, SCO to offer Vines solutions

BANYAN Systems and the Santa Cruz Operation (SCO) have announced a co-operative effort to deliver Banyan Vines network services on SCO Unix.

The program includes technology sharing and joint product development of a new class of distributed applications.

The two companies will create and market products that capitalise on their existing synergies: the open, standards focus of SCO's Intel-based Unix systems solutions, and Banyan's strengths in distributed, corporate-wide computing environments.

The companies will provide standard, Unix-based networking solutions that are easy for customers to install, manage and use.

High speed network printers

Anitech has released C.Itoh's PPS (professional printer series) family of high speed printers, which are designed for network printing applications.

There are three models in the range, covering print speeds of between 170 and 933 lines per minute, and all are designed for high reliability to sustain high volume printing for long periods.

All three feature the company's Three Users-Three Applications-One Printer design, under which the printers are provided with multiple personalities which can be selected either from the host or at the control panel.

As well, the printers are designed to handle a wide range of printing media, with flexible media handling, paper direction, thickness, multi-part copies, and zero tear-off for single documents.

Another standard feature is the ability to handle forms, barcodes, labels, logos and banners.

Anitech, 52/2 Railway Parade, Lidcombe 2141.

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112 on information card

Complete tests for FDDI networks

Tekelec Australia has announced the ChameLAN 100, a test system designed to provide complete monitoring and statistical analysis for high speed FDDI networks.

The company believes it is the first FDDI test system to ensure continuous network testing regardless of traffic loads or problems in the network.

Network managers can use the system to evaluate, install and maintain FDDI products, while FDDI product developers can test and diagnose problems in their products, evaluate network performance and resolve interoperability issues in a network environment.

"Test equipment is needed most when there are critical problems in the network," said Andrew Coglan, Tekelec's product marketing manager for OSI, LAN and FDDI products.

"The ChameLAN 100 provides full visibility of the FDDI network, regardless of network conditions, and offers full bandwidth (125M bits/s) monitoring of frames, fragments, symbols and line states."

It includes system software and specially designed hardware for realtime statistical analysis, filtering and triggering of network data.

Realtime analysis helps users view the overall health of their networks, while filtering and triggering capabilities allow them to capture network data according to user defined events.

Intelligent statistics

An intelligent statistics package is also included, with bar and line graphics, which summarises network information and helps isolate problems on the network.

Developers can also use the system to interpret FDDI protocols such as MAC and SMT, and higher level protocols such as TCP/IP and OSI.

The ChameLAN 100 is an independent passive solution which does not affect network activity. It is connected to the FDDI network using standard connections (single attached stations or dual attached stations), and operates as an FDDI repeater.

Motif interface

An easy to use, industry standard user interface, Motif, running under X-Windows and Unix makes the ChameLAN 100 system familiar to system managers. Its other features include an Intel 386 processor, a front-end Risc Transputer with either 5Mb or 20Mb of capture buffering.

It also includes a 100Mb or optional 200Mb built-in hard disk for system files and network data storage.

A thin film transistor (TFT) colour display provides high resolution graphics and greater portability, while an optional Ethernet adapter allows users to control the system remotely through a window from their own workstations.

The 5.5kg unit features rugged construction for field testing purposes.

"With FDDI, we are expanding our Chameleon data products beyond WAN and ISDN to include LAN and high speed broadband technologies," said managing director Michael Chrismale.

The analyser was co-developed in a project with Israeli company Neptune Intelligent Computer Engineering, partially financed by the Israel United States Binational Industrial Research and Development Foundation.

Tekelec Australia, Suite 14, 41-45 Richard Road, Bankstown 2200.
250 on information card

LAN Manager now on Unix

Microsoft LAN Manager is now available for Australian Unix users, following the September release of the Unix version of the software by the Santa Cruz Operation (SCO).

SCO has added a variety of value added enhancements to the operating system, which will work with SCO Unix System V/386 Release 3.2 and Open Desktop.

First demonstrated at the recent AUUG show, Microsoft LAN Manager for Unix includes Unix systems client support, IBM compatible NetBEUI transport support, virtual terminal facilities for Unix system logins, co-residency for multiple transport protocols, and multiprocessor support for systems using the SCO MPX extension to SCO Unix System V/386 and Open Desktop.

"With Microsoft LAN Manager for Unix Systems, SCO provides an easy to use and powerful network solution that closely integrates Unix system servers with Unix system, MS-DOS and OS/2 environments," said SCO's Australian general manager Peter Stanford.

As a resource sharing system, it allows a group of computers to share peripherals, so that users can share information files and printers on SCO systems acting as servers.

The SCO packaged product contains both Unix server software and the additional software required to connect MS-DOS, OS/2 and Unix machines.

These components include LAN Manager clients, NetBEUI transport modules, and popular LAN card drivers for MS-DOS, OS/2 and Unix.

"Designed to seamlessly integrate dissimilar systems, Microsoft LAN Manager for Unix Systems helps users optimise productivity by efficiently sharing critical data as well as costly computing resources," Mr Stanford said.

Because it provides networked access to the multiuser, multitasking Unix system, multiple users get access to data, files, applications, hard disks and printers. And users can maintain access to existing MS-DOS and OS/2 applications and data.

The Santa Cruz Operation, Ground Floor, 51 Rawson Street, Epping 2121.
253 on information card

OTC, Telecom Plus to provide EDI services for Woolworths

After a successful implementation of Phase I, Woolworths has chosen OTC Electronic Trading (OTC ET) and Telecom Plus as its EDI network and product provider.

With the imminent merging of OTC and Telecom, OTC ET and Telecom Plus submitted a joint proposal to meet the EDI requirements of Woolworths, its vendors and business partners.

Features of the proposal included flexible EDI solutions with a commitment to X.400 and OSI, a range of products and services, and access to both domestic and international value added networks.

Over the past year, Woolworths has closely assessed Phase I, which involved Safeway stores in Victoria trading over a period of six months with a number of major vendors including Coca-Cola Amatil, Johnson & Johnson and Colgate-Palmolive.

According to David Wills, general manager of Woolworths' management information service, the company chose OTC ET and Telecom Plus "after assessing the results of Phase I and the finalisation of a very detailed tender process."

"The partnership was chosen primarily on OTC's match of products and services to our tender criteria, the range of platforms supported, especially Unix and OSI, and the responsiveness to our requirements.

"Woolworths is now looking forward to a successful roll-out of EDI through its business and trading partner community," Mr Wills said.

T-R offering Startek twisted pair analyser

Tech-Rentals has added the Startek twisted pair analyser to its inventory of equipment available for hire.

The analyser is designed to check the performance and suitability of unshielded twisted pairs for use in 4/16M bits/s Token Ring and 10Base-T Ethernet LANs.

Cables are tested to the US commercial building telecommunications wiring standard EIA/TIA.

Various tests can be carried out on two, three and four twisted wire pairs, terminated in RJ-11 or RJ-45 connectors, including continuity, attenuation, near end crosstalk, and ambient noise level to 16MHz.

The analyser will also check all four pairs of a standard RJ-45 configuration for shorts, opens, polarity reversals and miswirings, and will automatically identify split pairs in Token Ring networks.

A built-in time domain reflectometer measures cable length, and will also indicate the distance to shorts and open circuits.

The Startek analyser also tests insertion and transmission functions for Startek's MAUs.

This handheld battery operated instrument weighs less than 500g, and presents its information on an LCD display. Operation via the two touch pads is in response to text information on the display.

Two RJ-45 test jacks are provided, with one supporting Ethernet and the other supporting Token Ring interfaces. A loopback plus is provided as standard for remote end connection.

Tech-Rentals, 12 Maroondah Highway, Ringwood 3134.
251 on information card

JNA moves into information service

SYDNEY-BASED network integrator JN Almgren is now providing market research information with the formation of JNA Information Services.

The company's service is centred on networking, computing and software strategy reports from Forrester Research of the US.

Forrester's research is based on regular interviews of Fortune 1000 companies, with analysts producing reports on the trends and successful implementation paths of major users, evaluation and comment on new technologies, and cost-benefit analyses.

The Forrster information is user-based rather than vendor-based, which according to JNA gives users objective information for negotiating with vendors.

The reports consist of a monthly strategic report, as well as bi-monthly bulletins covering day to day issues.

Recent strategic reports cover frame relay, SNA evolution, open systems and client/server tools.

A choice of annual subscriptions are available from JNA to buyers, with issues mailed direct from Forrester, and recent reports are also available to interested parties for evaluation.

"JNA Information Systems are a small yet important part of the total JNA portfolio of services," said JNA's services marketing manager Roger Harvey.

"JNA's position as an independent network integration company is further strengthened by its alliance with Forrester Research."

ISDN software for network analysers

Marconi Instruments is offering network testing in ISDN systems with the release of its 2850 Series digital transmission analysers.

The 2850 analyser is a combined pattern generator and error detector. It offers unframed or fully framed testing at 704K bit, 2M bit and 8M bit, and an optional facility to test North American systems.

Error injection and analysis capabilities including G.821, G.921, histograms and burst error analysis capability are offered.

The 2850A and S network testers are designed for 2M bits/s ISDN systems. The ISDN network uses CRC checking which monitors the error performance of the network.

The equipment in the network determines errors and sets appropriate bits within the 2M bits/s stream to indicate the magnitude and location of the errors.

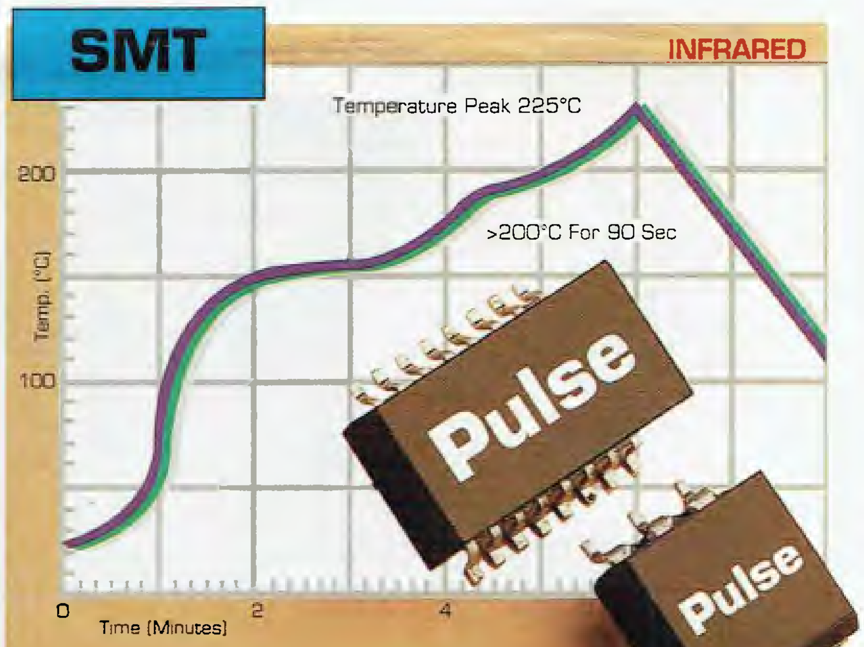
The instruments can display all eight NFAW in the CRC-4 multiframe, with high speed updating and error condition latching. The errors are indicated on the front panel LEDs.

The CRC block injection facility forces the network equipment to go into alarm conditions, and the NFAW monitor will detect that the appropriate bits change is required.

As well, the 2850A and S testers can measure synchronisation slips at the 2M bits/s level. They incorporate a second receiver port to measure frequency which is compared to the frequency on the normal receiver port.

A counter logs any difference in slips and totalises them during the test. An auto-print facility can be used for long term and unattended testing.

Marconi Instruments, Level 4, 15 Orion Road, Lane Cove 2066.
252 on information card



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Pulse

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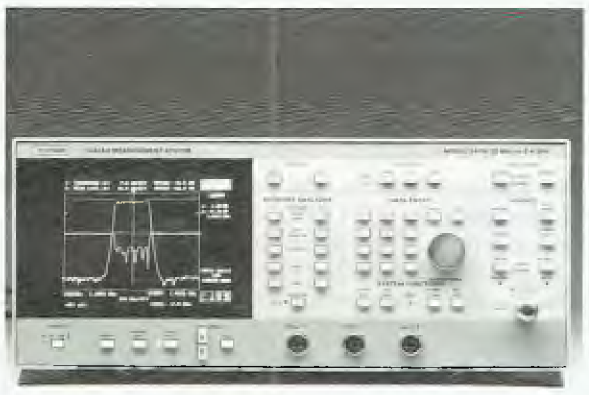
Scalar measurement system



The Wiltron 5400A scalar measurement system integrates an advanced scalar analyser with a built-in swept microwave source.

The instrument offers the stability and accuracy of a synthesised sweeper.

Six models are available for applications in direct broadcast satellite communications, terrestrial communications and military radar.

Frequency ranges include 10MHz to 8.4GHz, 2 to 8.4GHz, 8 to 12.4GHz, 10 to 16GHz, 12.4 to 20GHz, and 17 to 26.5GHz.

The 5400A comes with an optional GPIB interface and a reference channel to maintain calibration when changing power and external leveling for a flat power source, using external amplifiers to drive transmitters into compression.

Wiltron, 2/410 Church Street, Parramatta 2150.

260 on information card

Product information is supplied by local agents and manufacturers. To receive further information on the products featured in Communications Engineer, fill out and return the reader information card in this issue.

Video signal distribution system

Video signal distribution (VDS) for use in training room applications has been released by Thomas Electronics of Australia.

Video signals are transmitted from a master unit, used by a trainer, to the student's screen or the slave unit.

Students can view the trainer's applications on the screen and return to their own workstations via a switch supplied on each slave unit. Switching between applications allows quick learning, with continual reference to the trainer.

The VDS is suitable for use in schools, technical colleges, universities and private training organisations, which use computers in training room applications.

It can drive any analogue monitor including IBM VGA, Super VGA, XGA, Apple Macintosh and Amiga.

Up to 12 users can be supported, but can be increased to 20 users with an additional external power supply.

Thomas Electronics, 12 Larkin Street, Riverwood 2250.

261 on information card

A man's gotta book what a man's gotta book.

If the Duke had been a planner in your media department, chances are you'd have quite a few interesting discussions about why certain titles appear in your media recommendations. Having a strong gut feel definitely isn't the way to choose media, particularly when you need to reach specific audiences.

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114 on information card

Data circuit error performance analysis

Wandel & Goltermann's PF-25 bit error analyser is designed to analyse error performance of modems, multiplexers and data circuits at bit rates up to 72K bits/s.

The instrument counts bit errors and shows when they have occurred, so that the time an error occurred can be correlated with external events.

It is suitable for troubleshooting data circuits, modem and multiplexer development and testing, and testing of VF, baseband and wideband modem circuits.

Histograms on the LCD show all time events for the last 60 hours, as well as the distribution of bit errors and unavailable time.

Results can also be evaluated in accordance with CCITT Rec G.821, where the performance of a link is distinguished between error bursts and randomly distributed errors.

Setup information and results can be printed on an external printer using the PF-25's second RS232/V.24 interface.

Its memory stores eight sets of results and eight instrument setups.

The instrument's low weight, ease of operation and battery power makes it useful for field and laboratory applications.

Wandel & Goltermann, 42 Clarendon Street, South Melbourne 3205.

262 on information card

Caching controller

PSI Pacific has released the easyCACHE range of caching controllers for ESDI, SCSI and IDE drives, supporting two hard drives and two floppy drives.

Up to 4Mb standard SIMM RAM is support by easyCACHE. Designed as a plug-and-play solutions, the controllers do not require software drivers.

They are compatible with MS-DOS, Windows, Novell Netware, OS/2, Unix, Xenix and Pick operating systems.

The easyCACHE features an average disk access time of less than 0.3s, and data transfer rates of 4Mb/s in burst mode and 2.5Mb/s in sustained mode.

Adaptive cache algorithms, controlled by a 16 bit processor, are adjusted dynamically to suit random access or sequential access activity. Tracks are buffered in sequential mode to boost performance.

A delayed write feature allows the main processor to perform its task while the easyCACHE writes to the disk in the background.

PSI Pacific, 41 Wells Street, Newtown 2042.

263 on information card

Extended long range port for FibreScout

The Tektronix FibreScout fault finder is now available with a 1550nm single mode long range port, which allows testing of fibre links up to 64km. The 1550nm wavelength systems are vulnerable to macro and micro bending, which can cause system degradation or failure.

With the extended long range port, the FibreScout can easily identify bends and faults, their distances and related loss in dB.

The handheld FibreScout is also available with multimode short range (3km), universal short range (3km) and long range (27.5km).

Tektronix Australia, 80 Waterloo Road, North Ryde 2113.

264 on information card

Token gate controller

Memorex Telex has added the 1174-90T TokenGate, designed as a remote gateway for PCs and 3270 Token Ring networks, to its family of 1174 network controllers.

The TokenGate features two synchronous host interfaces and a 16/4 adapter and supports up to 140 down stream physical units.

Its two dual purpose coax connectors can, with multiplexing, support a total of eight attached coax devices.

The controller enables WANs, Token Ring LANs and desktop PCs to combine and deliver corporate data to the user's desk by giving up to 80 1174 sessions to PCs in a LAN.

Full support for NetView and NetView DM are featured. As well, the controller offers support for two directly attached or eight multiplexed displays or printers.

Memorex Telex, 3 Thomas Holt Drive, North Ryde 2113.

265 on information card

Two channel scopes

A range of Meguro Electronics' two channel oscilloscopes suitable for service work is available from Anitech.

Weighing 5.5kg, the MO-1240 Series contains a battery and charging unit for portable applications. Battery recharging takes two hours.

The range consists of MO-1241A/1242A/1243A, which cover bandwidths of 20, 40 and 60MHz respectively. All have a sensitivity of 1mV to 5V/division.

Voltages, time differences and frequencies can be displayed on the CRT screen in digital form. As well, a set of these readouts can be displayed simultaneously.

The oscilloscopes have video synchronisation on both horizontal and vertical.

Anitech, 52/2 Railway Parade, Lidcombe 2141.
275 on information card

Intelligent RS232 card

APC has released an intelligent 8/16 port RS232 card suitable for asynchronous communications.

Up to 64 users can be connected by using up to four 16 way cards in a host PC.

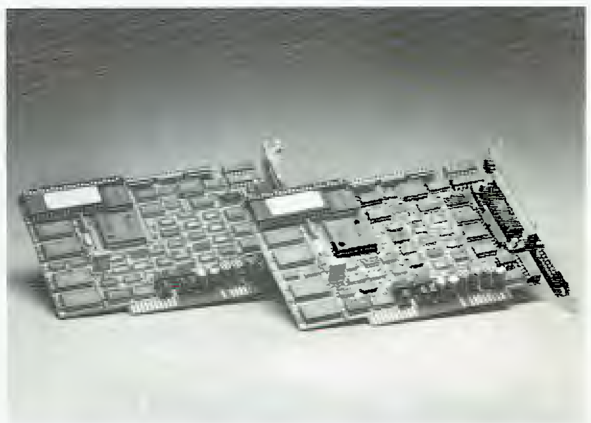
The card supports MS-DOS high level language function calls, allowing applications to interact with local or remote asynchronous terminal, videotex server, modem or serial equipment.

It is supplied with one or two external connection boxes, each containing eight DB25 connectors. A ribbon cable connects the external termination panel to the board.

Device drivers are supplied to support SCO, Unix, Xenix, Iteractive 386/ix and AT&T Unix. As well, it has MS-DOS support for C, Quick, Basic, Turbo Pascal, Clipper and Assembly languages.

Automation & Process Control Services, 12A Church Street, Bayswater 3153.
279 on information card

PC-based protocol analysers



INS has introduced Network Communication's PC10 and PC40 network probes, PC-based protocol analysers equipped with a processor and memory of 256Kb in PC10 and 512Kb in PC40.

The PC10 network probe monitors and emulates protocols at 64K bits/s in full duplex, while the PC40 performs at 256K bits/s in full duplex.

Both protocols come with SNA and X.25 emulations. The PC40 has additional decode and analysis packages.

The half size slot cards are IBM PC compatible and require EGA, VGA or Super VGA monitors.

INS, Unit 3A, 3 Lanceley Place, Artarmon 2064.
282 on information card

Portable data collector

The SPC Organiser, available from DAPS Australia, is a compact data processor and logger.

It features a two line LCD display, keyboard, data storage and operating software, as well as a solid state software module.

Shop floor data collection is achieved by keypad entry or by directly connecting through input modules to a wide range of analogue, digital and RS232 devices.

The unit can produce statistical charts and reports, including process capability, X-bar & Range, X-bar & Sigma, histogram and part/data file listing on a dot matrix printer.

An optional comms link module allows the unit to communicate to a serial printer or a host computer.

The unit retains its organiser functions, which allows features like calculator, diary with alarm, address, calender and world times to be accessed when the organiser is not collecting data.

DAPS Australia, 25 Northern Road, West Heidelberg 3081.
276 on information card

Standalone repeater

Integrated Networks has released the LER-T 10Base-T Ethernet repeater with eight UTP ports and one AUI port.

According to the company, a reliable networking solution is achieved when the repeater is used with additional LER-Ts or Lannet's modular smart hubs, transceivers and other Ethernet accessories.

It is suitable for small 10Base-T networks or for a remote section of a larger network.

Repeater functions performed include retiming of bits on a data stream, regeneration of amplitude and preamble bits, collision enforcement and fragment extension.

The AUI port with standard DB15 connector connects to thick or thin coax segments via a standard 802.3 transceiver or Lannet's synchronous media transceivers.

Synchronous signalling provide multi-layered repeaterless cascading of stars with network diameters of up to 4km.

All ports have automatic partitioning and reconnection for isolating faulty links from the network.

Integrated Networks, 26 Tepko Road, Terrey Hills 2084.
281 on information card

Cartridge tape drive

Memorex Telex has extended its family of cartridge tape drives with enhancements to the 5490 for AS/400 users, and the 5441-2 for smaller AS/400 users.

The 5490 cartridge subsystem comes with standard 4M buffer and features an accelerated rewind which reduces rewind time by 33%. Its data transfer rate is 4.5M bits/s.

Emulating IBM 3490, the unit has an optional expanded auto cartridge loader (EACL) that allows up to eight cartridges to be loaded and unloaded without operator intervention. Up to eight systems can be attached to each 5491 control unit.

The upgraded 5440 and the new 5441-2 magnetic tape cartridge subsystem are rack mountable.

A channel attachment gives the 5441-2 a device rate of 3Mb/s. This subsystem supports AS/400 Model B processor feature 2604 and Model B processor feature 2622. It will run at 3Mb/s with the 2622.

The 5440 features simultaneous error correction on four tracks to lower error rates. It connects to the AS/400 SCSI 2602, 2607 and 2608 on the AS/400 Model B and 2621 on Model D.

An optional automatic cartridge loader can pre-mount up to ten cartridges.

Memorex Telex, 3 Thomas Holt Drive, North Ryde 2113.
280 on information card

Better host security with Datalock

Dataplex has released a security controller designed to minimise the risk of unauthorised entry to host computers that are frequently accessed over public telephone circuits.

The Microframe Datalock 4000 provides an external connection with the host which screens and validates users before giving them host access.

To authenticate users, challenges comprising randomly varied multidigit codes are transmitted to the user terminal.

The Datalock 4000 is suitable for use with the popular PassKey hardware and SoftKey software authentication products.

Each PassKey user has a unique code and PIN which allow communication with the Datalock 4000. As responses are made to challenges, built-in DES (data encryption standard) algorithms in both the PassKey and the Datalock 4000 handle verification, and identify users as having achieved access rights.

SoftKey provides the same functions as PassKey using software loaded onto the user's system. It then generates responses to the challenges.

"Communication with the Datalock 4000 depends, therefore, on a combination of what you know (your PIN), and what you have either PassKey or SoftKey. Together they meet the classic requirements of user authentication," said Doron Ben-Meir, Dataplex' marketing manager.

To further enhance host security, the Datalock 4000 constantly monitors and audits all system activity once entry is gained. System managers are advised of who is using the system, what they are doing and when they are doing it.

The security system can also be setup to flag alarms if unauthorised users try to access restricted applications.

The Datalock 4000 can be used to safeguard up to 4000 dial-up lines.

Other features include automatic host log-on/log-off capability, a communications control language for customisation, data capture to help build up profiles of users, line monitoring for traffic analysis, automatic message broadcasting, an on-line repair and update facility, and DES encrypted data transmission.

Dataplex, 7-9 John Street, Lilydale 3140.
283 on information card

Novell adapter and MAU

Com Tech has released Eagle Technology's network interface card (NIC) and media access unit (MAU).

The NE2000T NIC for twisted pair cabling is a 16 bit interface card designed for networks using 10Base-T wiring. The unit is compatible with NetWare versions 2.x and 3.x and offers high performance and low power consumption.

The NE10T-TPA MAU is a standalone twisted pair adapter that allows users to convert existing Ethernet adapters for use in 10Base-T UTP networks.

It attaches to the thick coax or AUI connector on the installed Ethernet adapter and translates the signals between the adapter and the RJ45 modular phone jack.

The MAU is designed to IEEE802.3 10Base-T standards, incorporating features such as link test status, automatic loopback, intelligent squelch and 3V peak-to-peak signalling with pre-equalisation.

It sends and receives data, detects collisions on the network and protects the network's reliability by monitoring malfunctions.

Com Tech Communications, Unit 5, 37-41 Doody Street, Alexandria 2015.
278 on information card

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Excellent performance can still be achieved with optical path losses in the vicinity of 24dB. For safety reasons the optical output power is limited to -10dBm. Depending on path losses, distances of over 40km can be achieved without repeaters.

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Queensland : Broadcast Installations Pty Ltd (07) 846 4977

115 on information card

Fax under Windows

FaxNOW, available from Dataplex, is a software package that can send faxes under MS-Windows 3.0.

Faxes can be transmitted from any Windows application, or sent or received in background mode.

Features include fax editing, automatic resend facilities, automatic cover sheet generation, easy printing of sent or received faxes, and storage of up to 1000 telephone numbers.

FaxNOW is also available with FaxPORT, a communications package. This comes packaged with Worldport WP-2496 pocket fax/data modem.

The WP-2496 features 9600 bits/s Group III fax and 2400 bits/s data, and incorporates standard software for use with MS-DOS operated machine.

A Toshiba D slot version is also available for use in laptop computers.

Dataplex, 7-9 John Street, Lilydale 3140.

280 on information card

10Base2 to 10Base-T converter

Integrated networks has released the LEV-BT, an Ethernet 10Base2 to 10Base-T converter.

The LEV-BT can connect full Ethernet thin coax segment of 185mand 29 users to an unshielded twisted pair (UPT) cable over 120m.

It can be connected at any point along the coax line. Different media and topologies can be easily mixed.

Diagnostic indicators are provided to clearly notify the link activities and faults. The device is fully compatible with IEEE802.3 standard.

Integrated Networks, 26 Tepko Road, Terrey Hills 2084.

281on information card

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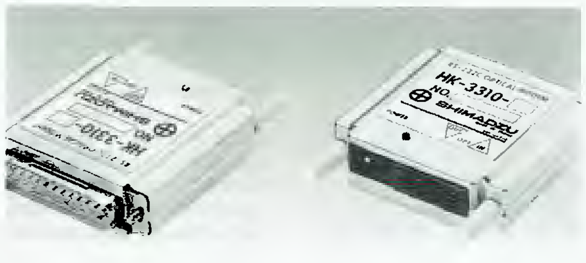
Price & Payne 3911TR

RS232C optical modem



Anitech has released Shimadzu's optical modem, designed for data transmission in electrically noisy environments.

The HK-3310 is plug compatible with a standard RS232C installation and conforms to the EIA RS232C specifications, allowing signals to be transmitted up to a distance of 1km.

Because the transmission cable is polymer clad fibre, the tranmitted signals are not subject to electromagnetic interference or radio frequency interference.

The modem supports a full duplex transmitting system, with a bit rate of 64K bits/s maximum asynchronised and 19.2K bits/s maximum for a synchronised system. The bit error rate is less than 10^{-9}.It has a low power consumption and operates over -20 to +70°C temperature range. It interfaces with RS232C, CCITT V.24.

Anitech, 52/2 Railway Parade, Lidcombe 2141.

283 on information card

Current loop adapters

Front Line Centre has designed the hybrid RS232/CL, RS423/CL and micro-modem line drivers for data transmission up to 18km at speeds of up to 38.4K bits/s.

Full duplex transmission is provided by a current loop. The units plug into the 25 way D type RS232C socket of terminals or computers, and are also supplied with a 25 pin female socket.

Optical isolators in both the transmitting and receiving loops protect the attached devices from transients.

The line drivers are designed to RS232C/V.24/V.28 specifications, and can also be made to custom specifications. The adapter modules measure 63 x 55 x 16mm.

Front Line Centre, 18 Dome Street, Eight Mile Plains 4113.

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Nine track tape subsystem

Elmeasco Instruments' Overload Data TL3201 nine track tape backup system requires no controller card and is suitable for small business or low volume users.

The unit uses the PC's parallel printer port, allowing data to be read or written on any PC or compatible computer. Data can be processed at up to 3Mb/min.

The Depot4 software supplied handles the reading and writing of the nine track tapes, converting between EBCDIC and ASCII character sets. Menus provide access to interchange and backup.

The TL3201 features an adaptive read retry logic to increase the tape tension automatically to improve readability with marginal or creased tapes.

Tape tension is kept to a minimum by a microprocessor and custom reel motors, resulting in minimal wear.

Measuring 120 x 450mm and weighing 14.5kg, the unit can be floor mounted.

Elmeasco Instruments, 18 Hilly Street, Mortlake 2137.

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Optical disk drive system

The Ominstor 654Mb multifunction optical disk drive subsystem from Anitech accepts both WORM and erasable magnetic optic (MO) type media.

Made by Computer Upgrade of the USA, the subsystem emulates a standard Winchester drive to the host operating system and can run under standard systems diagnostics. The user can also boot from this drive.

It uses an ANSI/ISO standard 654Mb multifunction 5" optical disk drive and the Omnicache SCSI cache interface.

This interface provides an automatic file index date/time stamp for archival audit. The run length encoded data is compressed, offering increased storage from 654Gb to 1Gb on each WORM or MO cartridge.

The unit is available in desktop or in rack mounting configurations.

Anitech, 52/2 Railway Parade, Lidcombe 2141.

285 on information card

Printer adapter

Andrew Australia has released a printer adapter to interface Canon laser printers to IBM mainframe systems.

LaserLynx III/coax supports the Canon LBP-8 Mark III, IIIT and IIIR printers by emulating an IBM 3287 printer. It allows mainframe users to share a printer with a locally attached PC, LAN or async host, maximising the printer usage.

It plugs into the optional interface port of the Canon printers and enables immediate host sourced printouts on installation, without performing any setup or configuration.

Users can access the printer's functional capabilities, including graphics, multiple font/formats and page orientation, by invoking a pseudo transparency feature that bypasses the limitations imposed by the IBM system.

For special print applications, the LaserLynx can be configured by downloading configuration commands from a host terminal, a local 3270 terminal, or a PC using the menu driven Configurator software.

Up to eight user defined configurations can be stored in nonvolatile EEProm memory for customised print formats.

Andrew Australia, 153 Barry Road, Campbellfield 3061.

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Send product details to Richard Chirgwin, PO Box 204 Strawberry Hills 2012

Training, conferences & exhibitions diary

NOVEMBER

November 11-12, Brisbane; November 13-15, Canberra; November 18-19, Perth

GOSIP Conference and Open Systems Workshop, two day workshop.

Contact: IIR Conferences, (02) 954 5844, fax (02) 959 4684

November 11-12, Sydney; November 18 - 19, Melbourne

EDI Technical Perspective Workshop, an interactive technical workshop designed to help technology managers in implementing EDI.

Contact: Lyn Wicks, Drake Training, (02) 957 5888, fax (02) 954 1183.

November 11-12, Sydney

Optimising ISDN Communications, a practical workshop with live demonstrations.

Contact: TTC, (02) 959 4229, fax (02) 923 1005.

November 11-13, Canberra; November 18 - 20, Canberra

SNA Essentials: seminar covering SNA architecture, implementation and connectivity.

Contact: MTE, (02) 261 5555, fax (02) 261 5959.

November 11-15, Melbourne

Australian Data Communications, training courses covering a choice of two day introductory seminar, three day advanced network design course, or five day combined course.

Contact: Housley Communications, (02) 499-2666, fax (02) 498-7669.

November 12, Perth; November 14, Adelaide; November 26, Melbourne

Strategic Cabling, free seminar covering all aspects of cabling system implementation and management, as well as cabling standards.

Contact: Jenny Edwards, Dowty Communications, (02) 451 6655, fax (02) 452 1490.

November 13-14, Sydney; November 18-19 Melbourne;

TCP/IP: A comprehensive training seminar focusing on understanding the key elements of TCP/IP and the Internet.

Contact: Technology Training Corporation, (02) 959-4229, fax (09) 923-1005.

November 14-15, Sydney; November 18-19, Melbourne

Optical Network Communications and FDDI: Two day seminar on optical fibre networks.

Contact: Technology Training Corporation, (02) 959-4229, fax (02) 923-1005.

November 18-20, Sydney

ComTap'91: three day data communications technology and practice seminar.

Contact: Housley Computer Communications, (02) 499-2666, fax (02) 498-7669.

November 18-20, Melbourne

EDI: training course covering standards and services.

Contact: Housley Communications, (02) 499 2666, fax (02) 498-7669.

November 18-21, St Louis, Missouri USA

40th International Wire and Cable Symposium

Contact: Elmer Goodwin, Pat Hudak, International Wire and Cable Symposium, 174 Main Street, Eatontown, NJ 07724 USA (908) 398 0990, fax (908) 398 0991.

November 25-26, Sydney

Intelligent Networks: seminar covering markets, strategies and business applications.

Contact: IIR Conferences, (02) 954 5844, fax (02) 959 4684

DECEMBER

December 2-3, Sydney

Security: seminar covering combating computer fraud and improving information systems security.

Contact: IIR Conferences, (02) 954 5844, fax (02) 959 4684

December 2-4, Singapore

The Pan-Asian Telecommunications Summit: this international conference will cover regional telecommunications opportunities, privatisation and regulation strategies, service provision and the impact of new technologies.

Contact: IIR, (02) 954 5844, fax (02) 959 4684.

December 2-5, Singapore

International Conference on Information Engineering; covers computer systems, communication systems and networking.

Contact: Associated Conventions and Exhibitions, Singapore (65) 732 6839, fax (65) 732 6309.

December 2-6, Sydney

Australian Data Communications, training courses covering a choice of two day introductory seminar, three day advanced network design course, or five day combined course.

Contact: Housley Communications, (02) 499-2666, fax (02) 498-7669.

December 2-6, Melbourne

TCP/IP Networking: three day seminar and two day workshop.

Contact: Housley Communications,

December 5-6, Canberra; December 12-13, Sydney

IT Purchasing Policy Reform: seminar designed to help government and suppliers comply with new IT policy and win IT contracts.

Contact: IIR Conferences, (02) 954 5844, fax (02) 959 4684

December 10-11, Sydney

Impact of the second carrier, competition and new technologies on State & Federal Government telecommunications networks, includes seminars and case studies.

Contact: IIR Conferences, (02) 954 5844, fax (02) 959 4684.

JANUARY

January 9-12, 1992, Indonesia

Computech '92: Computer equipment & technology exhibition being held at the Surabaya World Trade Centre.

Contact: Darcy Howard, HCH Consulting, phone & fax (03) 583 6110.

Hayes steps out into LAN operating systems market

by Richard Chirgwin

How does a company go about entering a market dominated by a product so well-known that its name has become synonymous with the technology?

That was the question confronted by Dennis Hayes, founder and president of Hayes Microcomputer Products, who was in Australia last month to launch his company's entry into the LAN operating systems market.

Best known as the giant in the modem market, Hayes has been involved in the LAN market since the mid-1980s, when it launched its InterBridge local/remote bridge for AppleTalk networks.

However, with the launch of its LANstep LAN operating system, Hayes has had to find a way of entering a market more or less owned by Novell's NetWare.

According to Mr Hayes, the answer is to define a new market segment by creating a product that will attract new users to LANs.

At the same time, he believes that LANstep represents "a fundamental redifinition of the local area network."

"There are several misconceptions about LANs," he said.

"People believe that they have to be complicated, that they have to be expensive, and that they have to be supported by highly trained in-house staff.

"Nobody would accept television if they were told that there had to be a repairman for every TV set sold. What we're trying to do with LANstep is to make LANs simple, inexpensive and familiar in the same way that TVs are."

New market

This, according to Mr Hayes, has allowed the company to define a new segment of the LAN market. LANstep is designed to attract users that would otherwise not buy networks, rather than trying to "steal" market share from the existing operating systems.

LANstep is a multitasking network operating system designed to offer the functions of high-end LAN operating systems with the simplicity and price of entry level LANs.

It is expandable in either five or twenty user increments, and according to Hayes, doesn't need a specialist to install or maintain.

The LANstep family covers six products, including the operating system, five or twenty step expanders, a mail gateway, a developer's kit, and boot ROMs for Hayes' Ethermate and WD Ethernet cards.

Although the key products are sold according to number of users, Hayes is quick to point out that the size of the network refers to the number of users simultaneously logged into the fileserver.

A five user LANstep system can be supporting any number of connected workstations, so long as only five stations are logged on at any one time.

Currently, the maximum configuration for a single LANstep network is 128 simultaneously active users out of 255 workstations.

However, the company emphasises that the limit to the number of users was a marketing choice, rather than an inherent limitation of the architecture.

The company believes that the maximum configuration of 128 users in LANstep Version 1.0 is easily large enough to give it access to the bulk of the network market.

"The median size of networks being installed today is around eight to twelve users," said Hayes' Canadian group manager for network software, Ian Telford.

"The architecture certainly doesn't restrict us to smaller networks if we want to expand its capacity in the future."

Thus, while LANstep is designed to woo new customers to the LAN, it still offers trouble-free expansion to larger configurations, Mr Telford said.

Reseller attractions

Mr Hayes said his company was also aware of the need to make LANstep attractive to the reseller.

Although its low retail price ($938 for the operating system, $633 for five step expanders and $938 for 20 step expanders) makes LANstep appear to be a low-margin product, the company believes its reliability and ease of use will protect that margin.

"We've had a very good response from resellers in the US since its release earlier this year, because they don't have to keep going back to sites to fix problems," Mr Hayes said.

"That means two things.

"Firstly, the profitability of the product isn't swallowed up by service calls. And secondly, because there are fewer calls to individual customers, one support engineer can handle more customers.

"Not only does that make it easier for the reseller to expand, it also frees the engineer up for more demanding and interesting work.

"The result of all this is that although the gross margin from the sale is lower, the reseller gets to keep more of it," Mr Hayes said.

Mr Telford remarked that margins on network operating systems "tend to be low anyway."

"The operating system is a commodity product, sold by everyone involved in selling networks.

"That means that the price competition puts a real squeeze on the margin available on the operating system. So we don't think there will be all that much difference in margins between LANstep and other network operating systems."

Terry Gray, managing director of Hayes' Australian distributor MPA International, said that the low price of LANstep could also open up opportunities for new ways of marketing LANs.

"For example, it might be possible to make bundling offers, where users who were buying several PCs would have LANstep thrown in.

"We'll be looking at things like that to develop the market in Australia in the future."

LANstep features

Ease of installation and use are the keys to Hayes' approach in LANstep.

A LANstep network covers three types of workstations: the network software server (NSS), LANstep workstations, and DOS workstations.

The operating system is installed on the network software server, which because of LANstep's multitasking nature doesn't have to be a dedicated server. The NSS stores the primary LANstep system files and management information, and downloads system files to all other workstations.

This simplifies installation, since the operating system needs only be installed on one station. Likewise, updates of the operating system only occur at one station.

The NSS shares applications, directories, and up to three printers on the network, and can access shared applications, directories, and printers offered by other workstations.

The next level of the system is the LANstep workstation, which can share directories and applications, and can share up to three printers with the network. The workstation can access shared directories, applications and printers connected to other workstations.

DOS workstations can share up to three printers with the network, but cannot share applications or directories with the network. They can, however, still access shared directories, applications and printers on other workstations.

Most PCs are supported by LANstep, from 8086 up to 486 units, and LANstep boot proms provide support for diskless workstations.

Other features of the system include disk caching on the NSS and LANstep workstations, and extended memory support.

LANstep is fully compatible with DOS 3.1 and higher, and with DOS applications running on any workstation including the server. It is also compatible with Windows 3.0 and Windows 3.0 applications running in either real or enhanced mode on a DOS workstation, or in real mode on a LANstep workstation.

There is also a mail package, LANstep Mail, which provides a high level of e-mail functionality.

MPA International, 51 Lusher Road, Croydon 3136.

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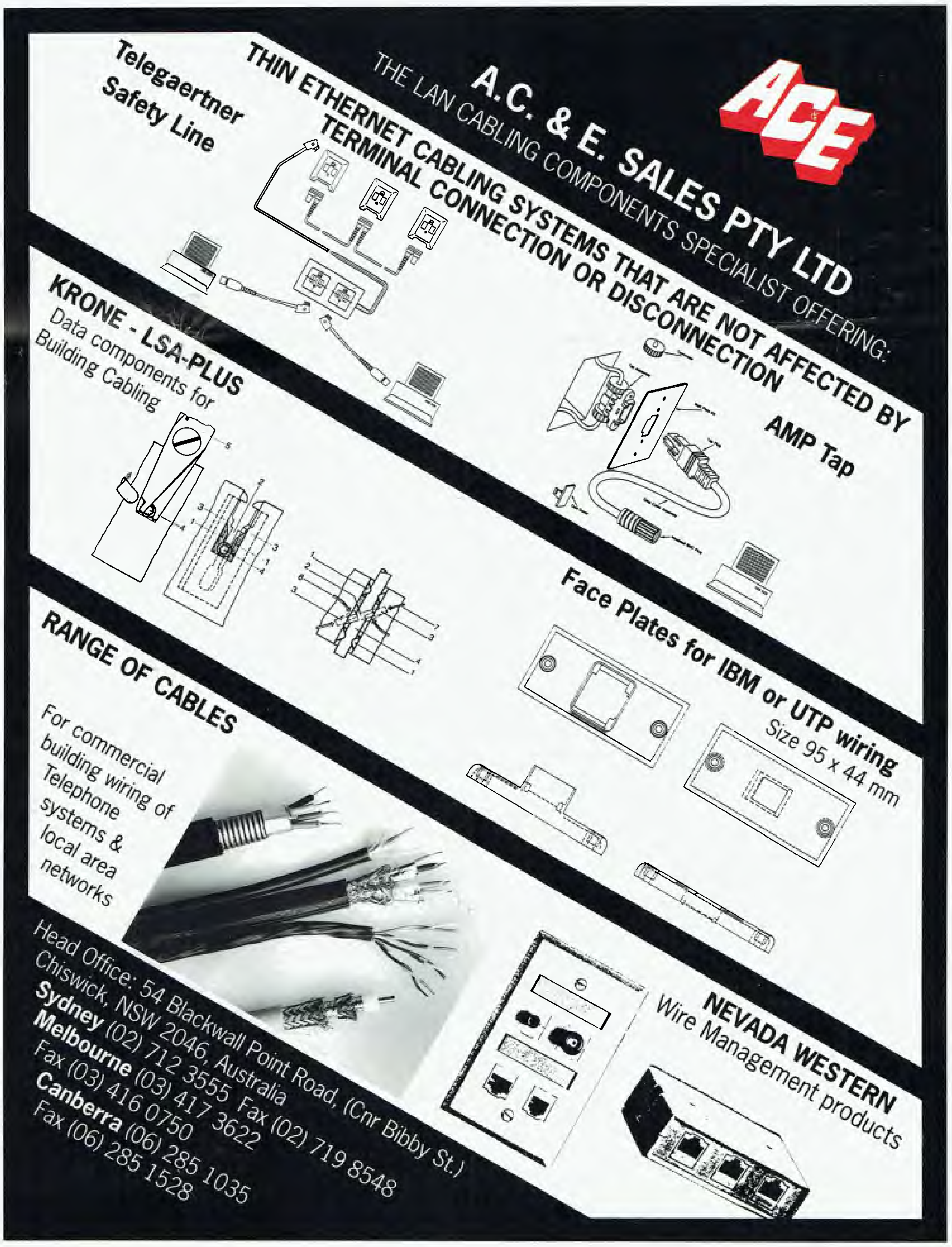
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